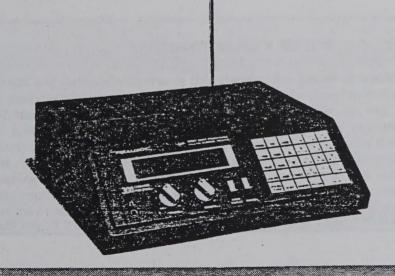
311R/R11-97

REALISTIC

# Service Manual

PRO-2004
PROGRAMMABLE SCANNER
GENERAL COVERAGE
AM/FM MONITOR RECEIVER

Catalog Number: 20-119/9119



CUSTOM MANUFACTURED FOR RADIO SHACK, A DIVISION OF TANDY CORPORATION



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#### PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special characteristics. These characteristics often pass unnoticed and the protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts that have these special safety characteristics are identified in this manual and its supplements; electrical components having such features are identified by a A in the schematic diagram and the parts list.

Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts that do not have the same safety characteristics as specified in the parts list may create shock, fire or other hazards.

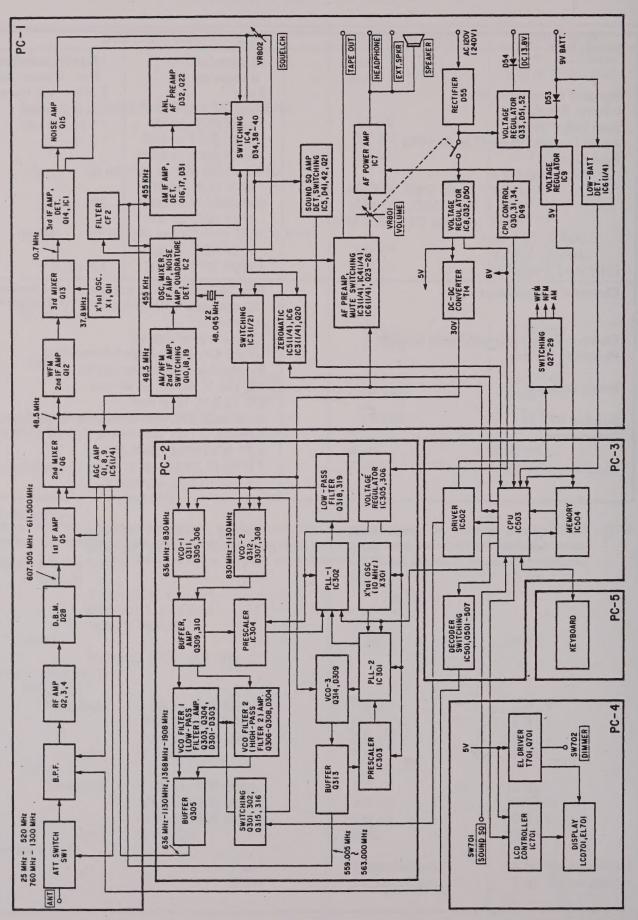
# **SPECIFICATIONS**

DESCRIPTION	NOMINAL SPEC.	LIMIT SPEC.
Frequency Range		25 to 520 MHz
		760 to 1300 MHz
Sensitivity		
NFM: 20 dB S/N at 3 kHz DEV. 1 kHz	0.5	20.4
25 to 520 MHz	0.5 μV 0.5 μV	2.0 μV 2.0 μV
760 to 1100 MHz 1100 to 1300 MHz	3.0 µV	10.0 μV
AM: 20 dB S/N at 60% MOD. 1 kHz	3.0 μ ν	10.0 μ ν
25 to 520 MHz	2.0 μV	5.0 μV
760 to 1100 MHz	2.0 µV	5.0 μV
1100 to 1300 MHz	3.0 µV	10.0 μV
WFM: 30 dB S/N at 22.5 kHz DEV. 1 kHz		
25 to 520 MHz	3.0 μV	10.0 μV
760 to 1100 MHz	3.0 µV	10.0 μV
1100 to 1300 MHz	10.0 μV	20.0 μV
Selectivity		
NFM/AM	The state of the s	1 1 1 1 1 1 1 1 1
<b>−6 dB</b>	±9 kHz	±12 kHz
-50 dB	±15 kHz	±18 kHz
WFM		
-6 dB	±150 kHz	±200 kHz
—50 dB	±300 kHz	±400 kHz
Modulation Acceptance: EIA RS-204-A	±8 kHz	±5 kHz
Spurious Rejection		
at 328 MHz (NFM)	40 dB	35 dB
Image Ratio at 70 MHz (NFM)	35 dB	25 dB
70 MHz + (2x610 MHz)		
= 1290 MHz	7	
IF Rejection		40.15
610 MHz at 70 MHz (NFM)	60 dB	40 dB
608 MHz at 1000 MHz (NFM)	60 dB	40 dB
Signal to Noise Ratio NFM/AM	40 dB	30 dB
3 kHz DEV. at 1 kHz	40 dB	30 db
60% MOD. at 1 kHz		
100 μV INPUT		
WFM	45 dB	35 dB
22.5 kHz DEV. at 1 kHz		
Squelch Sensitivity		
NFM/AM		
Threshold 25 to 520 MHz	0.5 μV	2.0 μV
760 to 1100 MHz	0.5 μV	2.0 μV
1100 to 1300 MHz	3.0 μV	10.0 μV
Tight (S + N/N)	25 dB	15 dB
WFM	20.1/	100 1/
Threshold 25 to 520 MHz	3.0 μV	10.0 μV
760 to 1100 MHz	3.0 μV	10.0 μV
1100 to 1300 MHz Tight (S + N/N)	10.0 μV 40 dB	20.0 μV 30 dB
Tight (S + N/N) Scanning Rate	40 UB	30 db
Fast	16 channel/sec.	14 to 18 channel/sec.
Slow	8 channel/sec.	7 to 9 channel/sec.
	0 011d111101/300.	, 10 0 chamici, 366.

Search Rate		1000	
Fast	16 steps/sec.	14 to 18 steps/sec.	
Slow	8 steps/sec.	7 to 9 steps/sec.	
Residual Noise (Vol. Min.)	3 mV	5 mV	
Priority Sampling	2 sec.	1.5 to 2.5 sec.	
Scan Delay Time	2 sec.	1.5 to 2.5 sec.	
Audio Output Power (T.H.D. 10%)	1.8 W	1.3 W	
Tape Output			
MOD. and DEV:			
NFM 3 kHz DEV. at 1 kHz			
AM 60% MOD. at 1 kHz	600 mV	300 mV	
WFM 45 kHz DEV. at 1 kHz			
LOAD: 10 k ohm			
INPUT: 100 μV			
LOW BATT Indicator	4.5 V	4.5 ± 0.5 V	
Channels of Operation	Any 300 channels (30 channels x 10 channels.	in any band combination banks), and 10 Monitor	
Channel, Frequency and Mode Display	Liquid crystal disp	lay	
Receiving System	Direct Key Entry I	Digital Controlled	
3 - 7 - 1	Synthesizer, Super	heterodyne.	
Power Source	AC 120 V, 60 Hz,	20 W max.	
	DC 13.8 V, 12 W r	nax.	
Speaker	Built-in 3" (77 mm) 8 ohm Dynamic Speaker		
Dimensions	Approx. 2-7/8" (7	5 mm) x 10-1/4" (275 mm)	
	× 9" (230 mm) HV		
Weight	7.0 lbs (3.2 kg.)		

NOTE: Nominal Specs represent the design specs: all units should be able to approximate these — some will exceed and some may drop slightly below these specs. Limit Specs represent the absolute worst condition that still might be considered acceptable; in no case should a unit perform to less than within any Limit Spec.

#### **BLOCK DIAGRAM**



#### PRINCIPLES OF OPERATION

The PRO-2004 is a Phase Locked Loop (PLL) synthesized VHF/UHF, AM/FM Receiver controlled by a Central Processing Unit (CPU) via the keyboard.

Receiving mode and search step are initially set to correspond with the frequencies entered. When a frequency within FM broadcast band is keyed in, receiving mode is set to Wideband FM (WFM). When a frequency in Action radio band, Police, Fire, Ambulance, Ham radio etc. is keyed in, the mode is set to Narrowband FM (NFM), and when a frequency in Aircraft and CB band is keyed in, it sets to AM mode. Also the mode and step can be changed by MODE, STEP Keys.

The CPU (IC-503) controls receiving frequency range, frequency determination, scanning speed, delay time, etc. The CPU is able to do only the assigned functions, and no modification of the CPU is feasible.

The following paragraphs explain the operation of the circuit in terms of the functional blocks:

RF input circuit comprises 10 dB attenuator and Bandpass filter. A signal generated by VCO-1 or VCO-2 is applied to Double balanced mixer (D.B.M.) via Low-pass or High-pass filter and mixed with the RF signal. The D.B.M. is employed to facilitates 25 MHz to 1300 MHz mixing.

The 1st IF (Q5) is 607.505 MHz to 611.500 MHz, and the signal is mixed with VCO-3 frequency at the 2nd mixer (Q6) to produce 48.5 MHz signal, which is applied to WFM IF (Q12) or AM/NFM IF (Q10, Q18, Q19). Corresponding with input from the keyboard, CPU determines which of VCO-1 or VCO-2, WFM IF, AM/NFM, AM IF, Data of PLL circuit to be functioned, and outputs the necessary data.

A signal entered to AM/NFM IF is mixed with X'tal oscillation frequency 48.045 MHz at the 3rd mixer (IC-2) and converted to 455 kHz signal. A signal entered to WFM IF is mixed with X'tal oscillation frequency 37.8 MHz at the 3rd mixer (Q13) and converted to 10.7 MHz signal. The signals are further amplified and detected to AF signal.

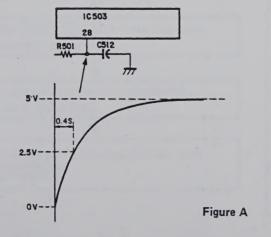
AF signals of WFM, AM, NFM are CPU controlled and applied to AF Power Amplifier (IC-7) via switching circuit. Squelch signal is comprised of noise product from WFM/NFM detector output, and amplified by IC-2 to switching signal, which controls AF mute and CPU.

Any unstable supply voltage to the CPU can produce CPU malfunctions, such as wrong data processing, wrong data transfer, etc. To overcome this C512 and R501 "initialize" the CPU. Initialization is done when RESTART switch is pushed. Figure A shows initializing waveform.

CX501 (7.37 MHz) is a clock which is used for CPU control. Figure B shows 1/4 divided waveform at Pin 31 of IC-503.

CPU output data display frequency, function, etc. on LCD. LCD is back lighted with Electro Luminescence, which works from 70 V rms, 300 Hz A.C.

Power supply comprises D.C 30 V, 8 V and two 5 V lines.



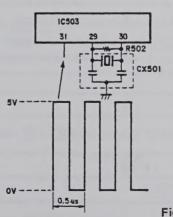
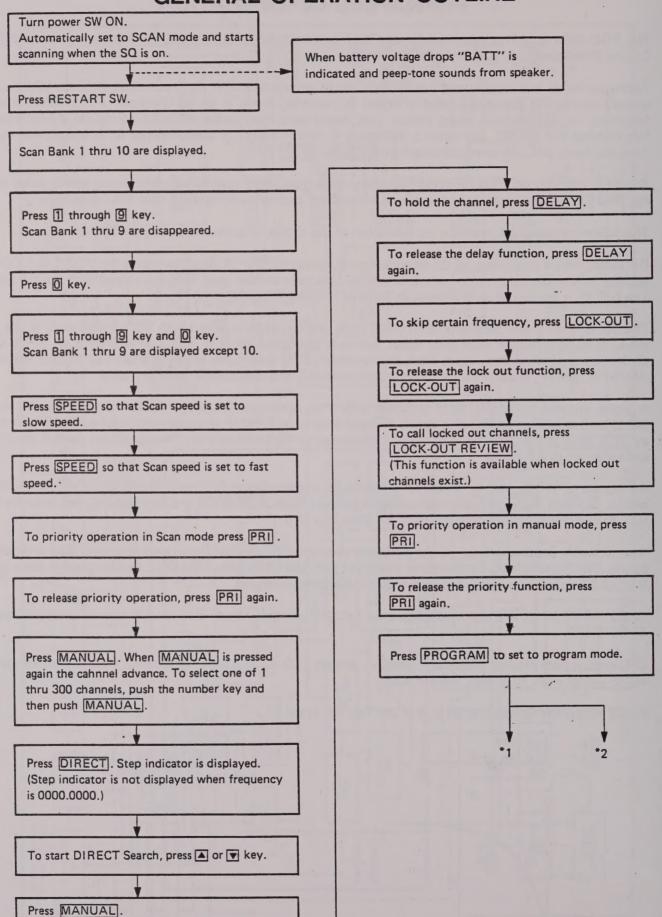
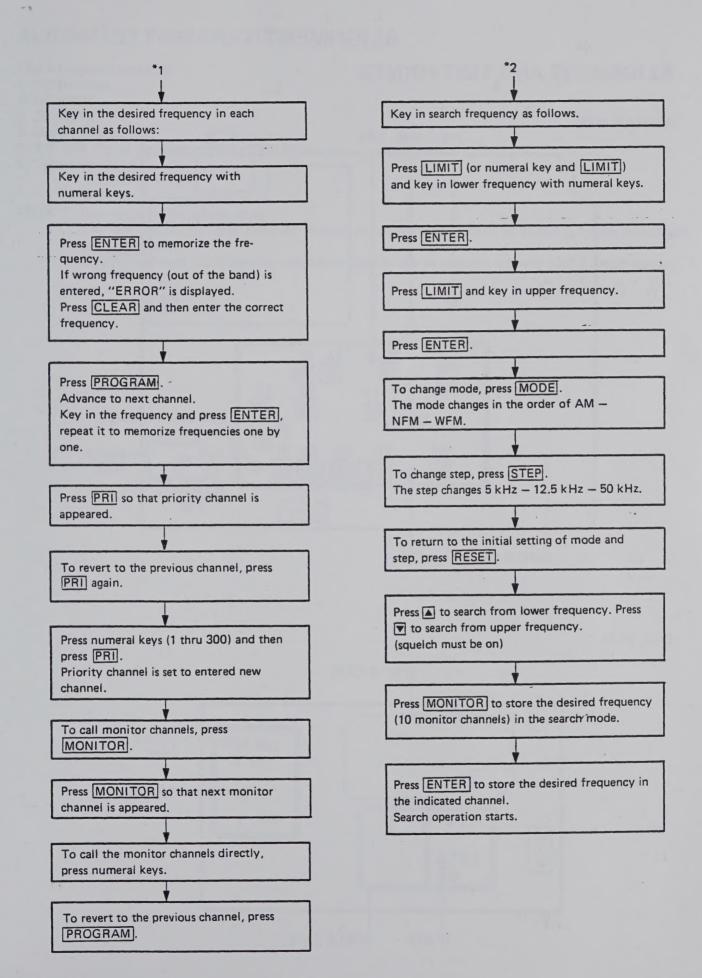


Figure B

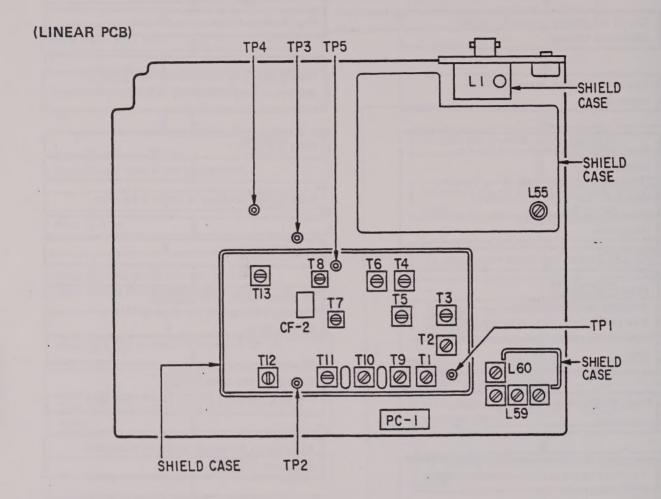
#### **GENERAL OPERATION OUTLINE**



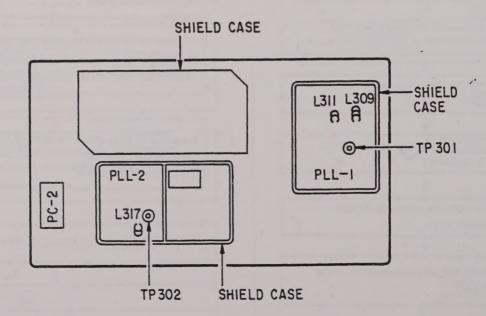


#### **ALIGNMENT**

#### **ALIGNMENT AND TEST POINTS**



(PLL PCB)



#### **ALIGNMENT PREPARATION**

#### Test equipment required

- 1. Oscilloscope
- 2. AC SSVM
- 3. DC SSVM
- 4. 8-ohm dummy load
- 5. AM. FM. Signal Generator (25 to 1300 MHz)
- 6. Distortion Meter

#### NOTE 1: Use non-metallic tuning tools.

The test equipment and Receiver should be warmed up at least 30 minutes before proceeding with alignment.

Input signal from the Generator should be kept as low as possible and still obtain usable output.

## **ALIGNMENT PROCEDURES**

Step	Control Setting Channel Programming	Test Instrument Connection	Adjust	Remarks
1	OFF/VOLUME control: ON SQUELCH control: Fully counterclockwise (CCW) Channel Programming: CH1 (220.495 MHz) CH2 (520 MHz)	Connect DC SSVM to TP301 (Figure 1)	L309 L311	Alignment of VCO (PLL-1)  1) Select Channel 1 (220.495 MHz) and adjust L309 for 20V on the DC SSVM. See Table 1.  2) Select Channel 2 (520 MHz) and adjust L311 for 20V on the DC SSVM. See Table 1.
2	OFF/VOLUME control: ON SQUELCH control: Fully CCW Channel Programming: CH3 (804.5 MHz)	Connect DC SSVM to TP302 (Figure 2)	L317	Alignment of VCO (PLL-2)  Adjust L317 for 3V on the DC SSVM.  See Table 1.

Figure 1

TP301

DC SSVM

UNIT
UNDER TEST

DC SSVM

DC SSVM

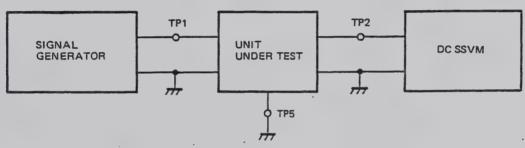
DC SSVM

Table 1

	Coil L309, L311, L317	Coil alignment (open)	Coil alignment (close)
Figure 3		Figure 4	Figure 5
	Use non metallic tuning tool  PLL P.C.B.	Coil PLL P.C.B.	Coil PLL P.C.B.
NOTE 1:	Perform coils interval alignment delicately because it affects frequency much.	* Open the coil as shown above by using non metallic tuning tool when a measuring	* Close the coil as shown above by using non metallic tuning tool when a measuring
NOTE 2:	1 7	voltage at TP301 or TP302 is higher than the setting voltage.	voltage at TP301 or TP302 is lower than the setting voltage.

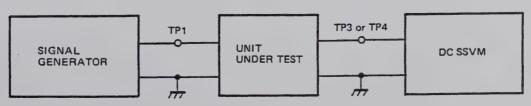
Step	Control Setting Channel Programming	Test Instrument Connection	Adjust	Remarks
3	OFF/VOLUME control: ON SQUELCH control: Fully counterclockwise Channel Programming: CH4 (250 MHz -NFM)	Connect Signal Generator to TP1, DC SSVM to TP2 and TP5 to ground. (Figure 6)	T1 T9 T10 T11 T12	Alignment of NFM/AM 2nd IF  1) Set the Signal Generator frequency to 48.5 MHz, 0.3 V output (NO MOD).  2) Adjust T1, T9, T10, T11 to maximum voltage at TP2.  3) Adjust T12 to minimum voltage at TP2, approx. 0.2V on the DC SSVM.  NOTE: Perform these adjustment by using the DC SSVM which is able to measure to three decimal places because of the output voltage of TP2 is low.





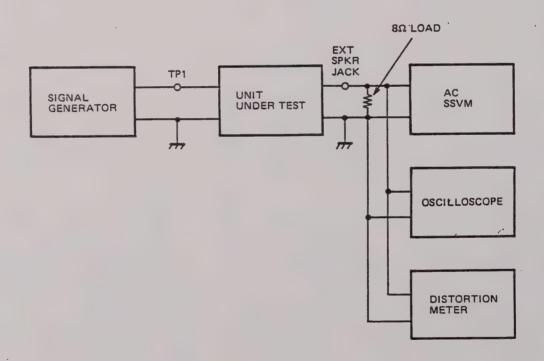
Step	Control Setting Channel Programming	Test Instrument Connection	Adjust	Remarks
4	OFF/VOLUME control:	Connect Signal Generator to TP1 and	T13	Alignment of 455 kHz NFM Discriminator coil
	SQUELCH control: Fully CCW Channel Programming: CH4 (250 MHz - NFM)	DC SSVM to TP4. (Figure 7)		Set the Signal Generator frequency to 48.5 MHz, 100 $\mu$ V output (NO MOD) and adjust T13 for 3.8V (±0.1) on the DC SSVM.
5	OFF/VOLUME control: ON	Connect Signal Generator to TP1 and	Т6	Alignment of 10,7 MHz WFM Discriminator coil
	SQUELCH control: Fully CCW Channel Programming: CH5 (98 MHz - WFM)	DC SSVM to TP3. (Figure 7)		Set the Signal Generator frequency to 48.5 MHz, 100 $\mu$ V output (NO MOD) and adjust T6 for 3.8V (±0.1) on the DC SSVM.

Figure 7

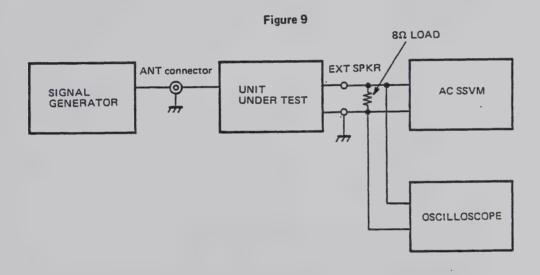


Step	Control Setting Chanel Programming	Test Instrument Connection	Adjust	Remarks
6	OFF/VOLUME control: ON SQUELCH control: Fully CCW Channel Programming: CH6 (120 MHz - AM)	Connect Signal Generator to TP1 and Oscilloscope, AC SSVM, Distortion Meter, 8Ω Load to EXT SPKR JACK. (Figure 8)	Т	Alignment of 455 kHz IF coil  1) Set the Signal Generator frequency to 48.5 MHz,  AM: 60% MOD. at 1 kHz and 100 μV output  2) Adjust T7 to maximum sensitivity.
7	Same as step 6	Same as step 6	Т8	Alignment of 455 kHz AM DET. coil  1) Set the Signal Generator frequency to 48.5 MHz, AM: 60% MOD. at 1 kHz and 100 μV output.  2) Adjust T8 to minimum T.H.D. point.

Figure 8



Step	Control Setting Channel Programming	Test Instrument Connection	Adjust	Remarks
8	OFF/VOLUME control: ON SQUELCH control: Fully CCW Channel Programming: CH5 (98 MHz - WFM)	Connect Signal Generator to ANT, connector and Oscilloscope, AC SSVM, 8Ω LOAD to EXT SPKR JACK. (Figure 9)	T2 T3 T4 T5	Alignment of 48.5 MHz and 10.7 MHz WFM IF coils  1) Set the Signal Generator frequency to 98 MHz FM: 22.5 kHz DEV. at 1 kHz MOD, output approx. 2 µV.  2) Adjust T2, T3 to maximum sensitivity.  NOTE: Alignment of T4, T5 are not necessary. When those core are turned, adjust cores so that those tops of cores become as high as those coil case.



Step	. Control Setting Channel Programming	Test Instrument Connection	Adjust	Remarks
9	OFF/VOLUME control: ON SQUELCH control: Fully CCW Channel Programming: CH7 (300.495 MHz — NFM)	Same as step 8	L1 L55	Alignment of IF TRAP coils  1) Set the Signal Generator frequency to 609.505 MHz FM: 3 kHz DEV. 1 kHz MOD. Output, approx. 3 mV  2) Adjust L1 and L55 to minimum sensitivity.
10	OFF/VOLUME control: ON SQUELCH control: Fully CCW Channel Programming: CH8 (240.495 MHz — NFM)	Same as step 8	L60	Alignment of 512 MHz TRAP coil  1) Set the Signal Generator frequency to 337.495 MHz FM: 3 kHz DEV. 1 kHz MOD, Output, approx. 3 mV  2) Adjust L60 to minimum sensitivity.

NOTE: Alignment of L59 (GR-H763, B.P.F. coil)

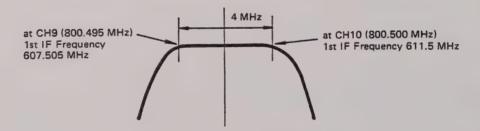
Do not adjust this coil because of L59 is already adjusted at Factory. When turn the coil core, perform the alignment as below (step 11).

B.P.F. characteristic is Figure 10.

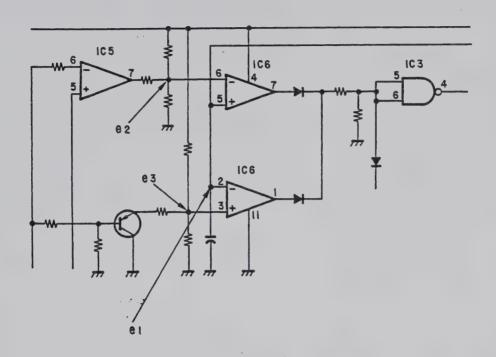
Step	Control Setting Channel Programming	Test Instrument Connection	Adjust	Remarks
11	OFF/VOLUME control: ON	Same as step 8 (Figure 9)	L59	Alignment 1st IF (611.5 to 607.505 MHz) B.P.F. coil
	SQUELCH control: Fully CCW Channel Programming: CH9 (800.495 MHz) CH10 (800.500 MHz)			<ol> <li>Select channel 7 (800.495 MHz) and set the Signal Generator frequency to 800.495 MHz,         FM: 3 kHz DEV. at 1 kHz and 1 μV output.</li> <li>Adjust L59 to maximum sensitivity.</li> <li>Select channel 8 (800.500 MHz) and set the Signal Generator frequency to 800.500 MHz,         FM: 3 kHz DEV. at 1 kHz and 1 μV output.</li> <li>Adjust L59 to maximum sensitivity.</li> <li>NOTE: Align the balance of CH9, CH10 sensitivity to become same.</li> </ol>

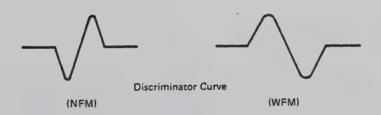
Figure 10

1st IF Center Frequency (609.505 MHz)



#### ZEROMATIC FUNCTION TEST PROCEDURE





(Zeromatic functions when OUTPUT is in "H" level.)

	0 < e1 < e3	e3 < e1 < e2	e2 < e1 < VCC
OUTPUT (IC3 Pin No. 4)	L	Н	L

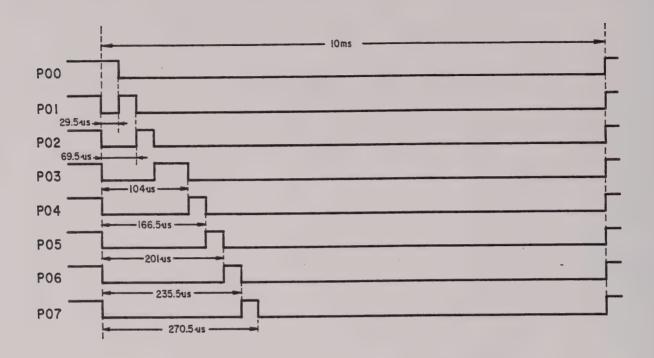
#### (NFM MQD.)

To adjust e1 voltage, receive signal in Manual mode, and set T13 to obtain 3.8 V ( $\pm 0.1$  V) at TP4. It is convenient to use the National Weather Service signal for the adjustment.

#### (WFM MOD.)

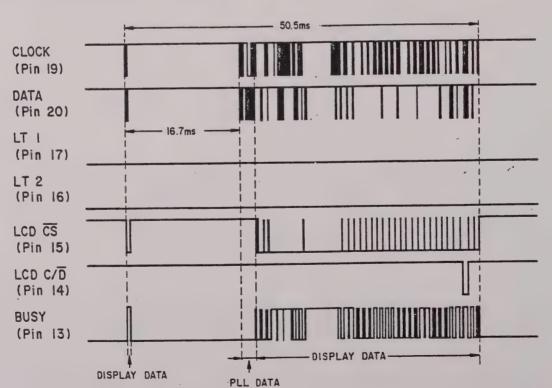
To adjust e1 voltage, receive signal in Manual mode and set T6 to obtain 3.8 V (±0.1 V) at TP3. It is convenient to use the FM. TV. sound signal for the adjustment.

#### KEYS ACCESS PULSE OUTPUT (IC-503)



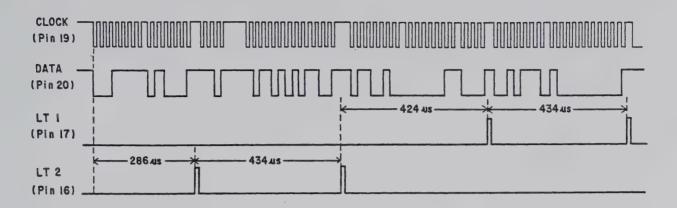
NOTE: Use a signal at P01 of IC-503 as trigger, and then observe the keys access pulse when PROGRAM key is pressed.

#### **DATA WAVEFORM (IC-503)**



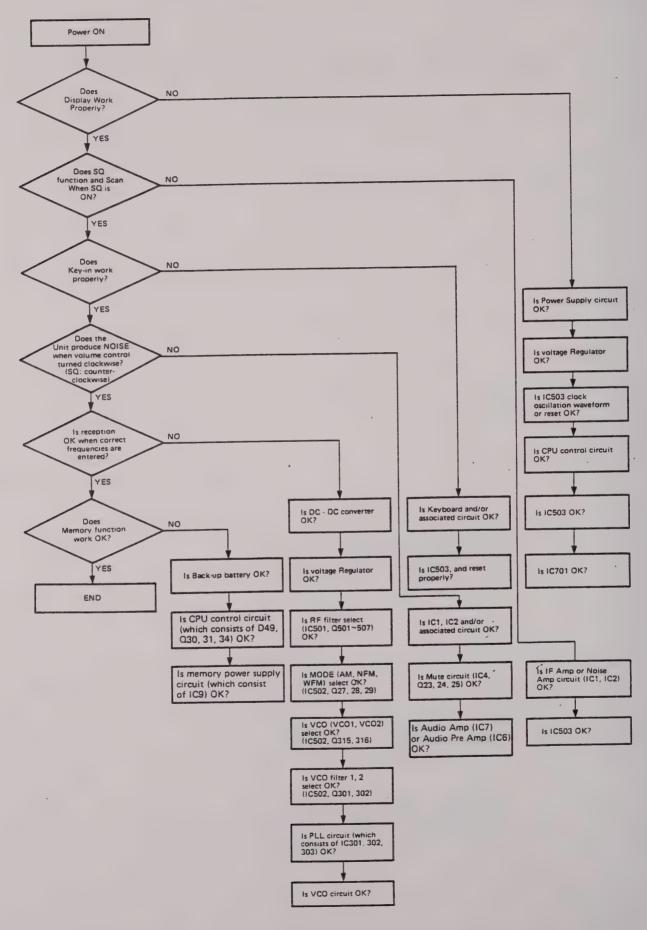
4.

#### PLL DATA WAVEFORM

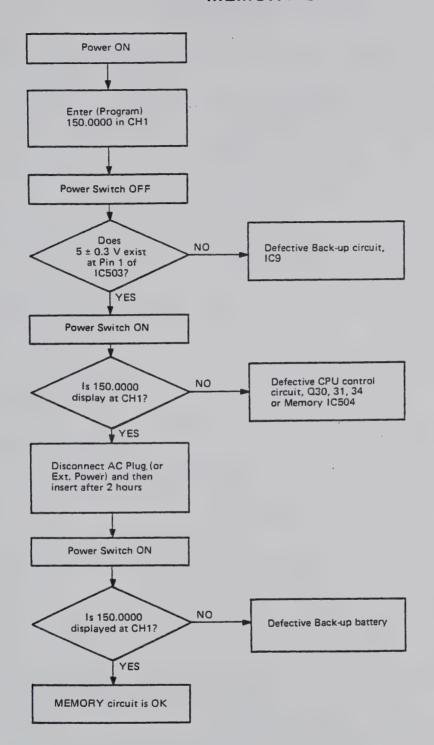


NOTE: Data in Program mode when 150.000 MHz entered.

#### RECEPTION CHECK



#### MEMORY CHECK



# TROUBLESHOOTING

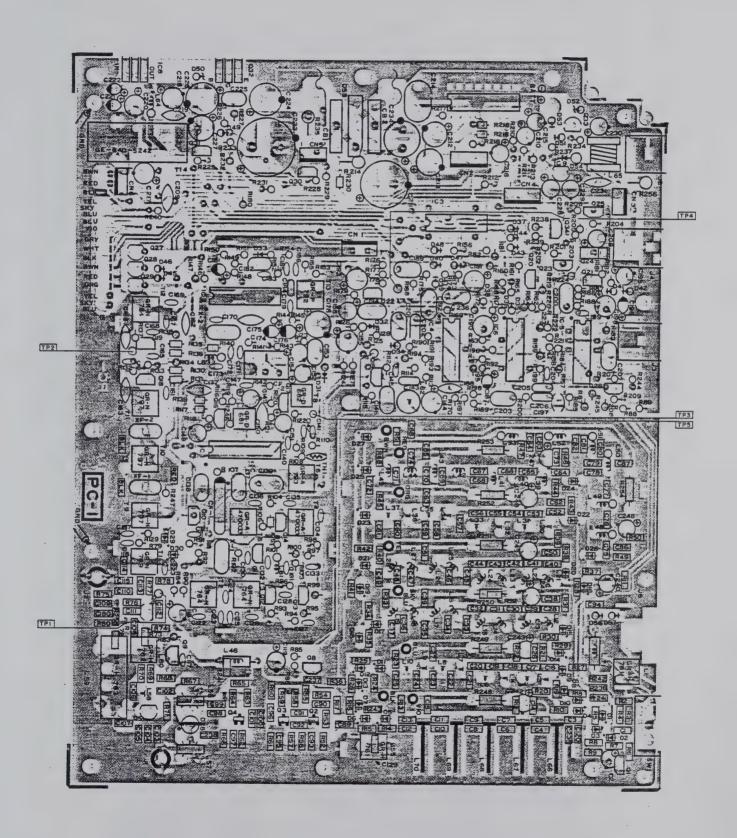
Symptom	Cause/Remedy
1) Does not display and no sound when POWER is ON. Volume control: MAX. Squelch control: CCW (counter-clockwise)	<ol> <li>Defective AC Line Cord: Replace.</li> <li>Defective Power transformer T801: Replace.</li> <li>Defective Off/Volume control VR801: Replace.</li> <li>Defective Rectifier D55: Replace.</li> <li>Defective voltage regulator circuit: Replace the defective components.</li> <li>Defective CPU control circuit consists of Q30, Q31, Q34, D49: Replace the defective components.</li> </ol>
2) Displays but no sound.	<ol> <li>Defective speaker or headphone jack: Replace.</li> <li>Defective Audio Amp. circuit consists of IC7: Replace the defective components.</li> <li>Defective IF Amp. circuit consists of IC1, IC2: Replace the defective components.</li> <li>Defective Squelch control circuit consists of IC3, IC4: Replace the defective components.</li> <li>Defective AF Pre Amp. circuit consists of IC6: Replace the defective components.</li> <li>Defective Audio Mute Switching circuit consists of IC3, IC4 and Q23, Q24, Q25: Replace the defective components.</li> <li>Defective Switching circuit consists of IC4, D34, D38, D39 and D40: Replace the defective components.</li> </ol>
3) Sounds but no display	<ol> <li>1) IC503 is running "wild": Press RESTART Switch.</li> <li>2) Defective initiate control circuit: Replace the defective components.</li> <li>3) Defective voltage regulator circuit consists of IC9: Replace the defective components.</li> <li>4) Defective LCD: Replace.</li> <li>5) Defective CPU circuit consists of IC503: Replace the defective components.</li> <li>6) Defective LCD Controller circuit consists of IC701: Replace the defective components.</li> </ol>
4) Backlight does not light	Defective EL Driver circuit consists of T701, Q701: Replace the defective components.     Defective EL: Replace.
5) Does not squelch and does not scan.	1) Defective Switching circuit consists of IC3: Replace IC3. 2) Defective IC2 squelch control output terminal: Replace IC2. 3) Defective voltage regulator circuit consists of Q32, D50: Replace the defective components.
Squeich operates but does not scan.	1) IC503 is running "wild": Press RESTART Switch.     2) Defective CPU circuits: Replace the defective components.
7) Operates in MANUAL but does not operate in SCAN.	Squelch control is not adjusted correctly: Adjust Squelch (VR802).
Displays but PROGRAM does not operates.	Defective Keyboard or connector and/or associated circuit: Replace the defective components.

Symptom	Cause/Remedy
9) No sound in AM mode but NFM, WFM operate.	<ol> <li>Defective IC502 or IC503: Replace.</li> <li>Defective Switching circuit consists of Q29, D40, D45: Replace the defective components.</li> <li>Defective ANL, AF Pre Amp. circuit consists of D32, Q22: Replace the defective components.</li> <li>Defective AM IF DET. circuit consists of Q16, Q17, D31: Replace the defective components.</li> </ol>
10) No sound in NFM mode but AM, WFM operate.	1) Defective IC502 or IC503: Replace. 2) Defective Switching circuit consists of Q28, D46: Replace the defective components.
11) No sound in AM and NFM MODE but WFM operate.	1) Defective IC2: Replace.
12) No sound in WFM mode but AM, NFM operate.	1) Defective IC502, 503 or IC1: Replace. 2) Defective Switching circuit consists of Q27, D47: Replace the defective components.
13) Low sensitivity between 25.0000 to 39.9950 MHz.	Defective DECODER SWITCHING circuit consists of IC501, Q501:     Replace the defective components.     Defective Bandpass filter (B.P.F): Replace the defective components.
14) Low sensitivity between 40.0000 to 67.9950 MHz.	Defective DECODER SWITCHING circuit consists of IC501, Q502:     Replace the defective components.     Defective B.P.F: Replace the defective components.
15) Low sensitivity between 68.0000 to 107.9950 MHz.	1) Defective DECODER SWITCHING circuit consists of IC501, Q503: Replace the defective components.  2) Defective B.P.F: Replace the defective components.
16) Low sensitivity between 108.0000 to 173.9950 MHz.	1) Defective DECODER SWITCHING circuit consists of IC501, Q504: Replace the defective components. 2) Defective B.P.F: Replace the defective components.
17) Low sensitivity between 174.0000 to 279.9950 MHz.	1) Defective DECODER SWITCHING circuit consists of IC501, Q505: Replace the defective components. 2) Defective B.P.F: Replace the defective components.
18) Low sensitivity between 280.0000 to 520.0000 MHz.	Defective DECODER SWITCHING circuit consists of IC501, Q506:     Replace the defective components.     Defective B.P.F: Replace the defective components.
19) Low sensitivity between 760.0000 to 1300.0000 MHz.	<ol> <li>Defective DECODER SWITCHING circuit consists of IC501, Q507: Replace the defective components.</li> <li>Defective B.P.F: Replace the defective components.</li> </ol>
20) Does not operate between 25,0000 to 220,4950 MHz or 760,0000 to 1052,4950 MHz.	Defective IC503 port P10, IC502, Q315 and/or VCO-1 circuit: Replace the defective components.

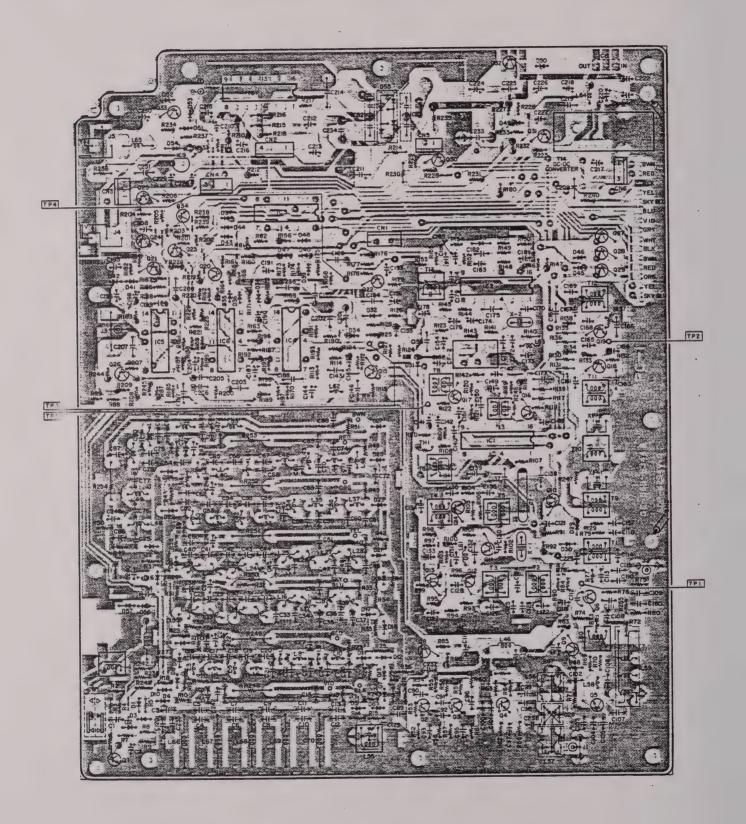
Symptom	Cause/Remedy
21) Does not operate between 220.5000 to 520.0000 MHz or 1052.5000 to 1300.0000 MHz.	Defective IC503 port P11, IC502, Q316 and/or VCO-2 circuit: Replace the defective components.
22) Low sensitivity between 25.0000 to 520.0000 MHz.	Defective IC503 port P66, IC502, Q301 and/or VCO filter-1 circuit: Replace the defective components.
23) Low sensitivity between 760.0000 to 1300.0000 MHz.	Defective IC503 port P67, IC502, Q302 and/or VCO filter-2 circuit: Replace the defective components.
24) All band do not operate but display is OK.	1) Defective PLL circuit IC301, IC302, IC303, IC304 and/or associated circuit: Replace the defective components.  2) Defective IC305, IC306 and/or associated circuit: Replace the defective components.
25) Searches but does not halt on the correct frequency.	1) Defective IC6: Replace. 2) Discriminator Coil T13 (AM and NFM mode or T6 (WFM mode) is out of adjustment: TP4 shall have approx. 3.8 V in normal receiving AM and NFM mode. TP3 shall have approx. 3.8 V in normal receiving WFM mode.

# P.C. BOARDS (TOP & BOTTOM VIEWS)

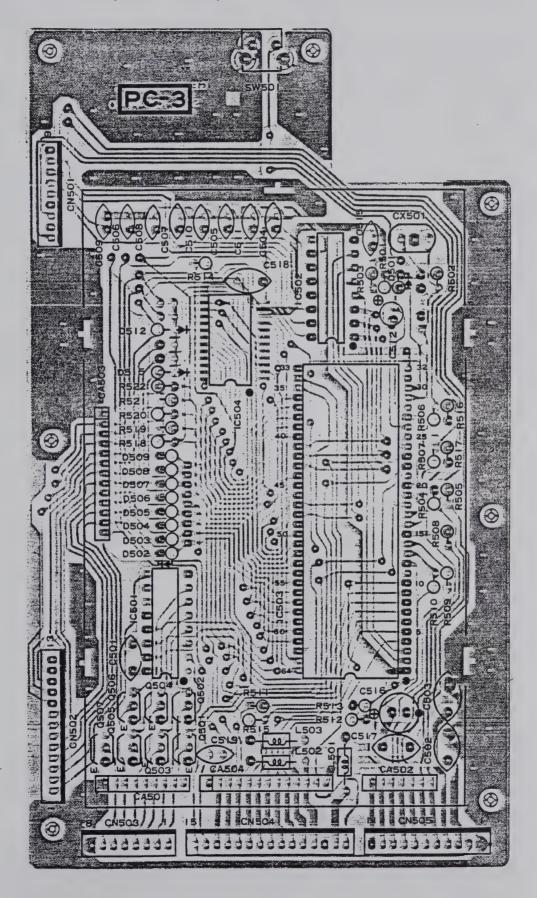
LINEAR P.C. BOARD (TOP VIEW)



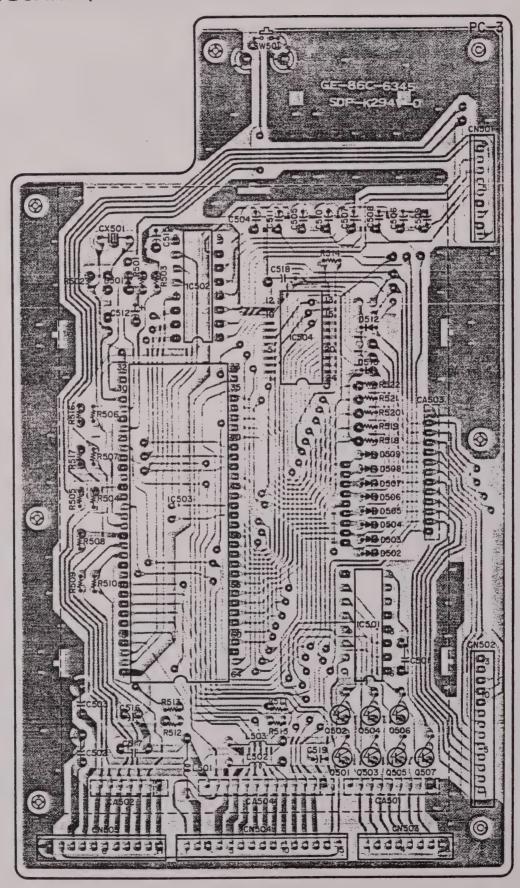
# LINEAR P.C. BOARD (BOTTOM VIEW)



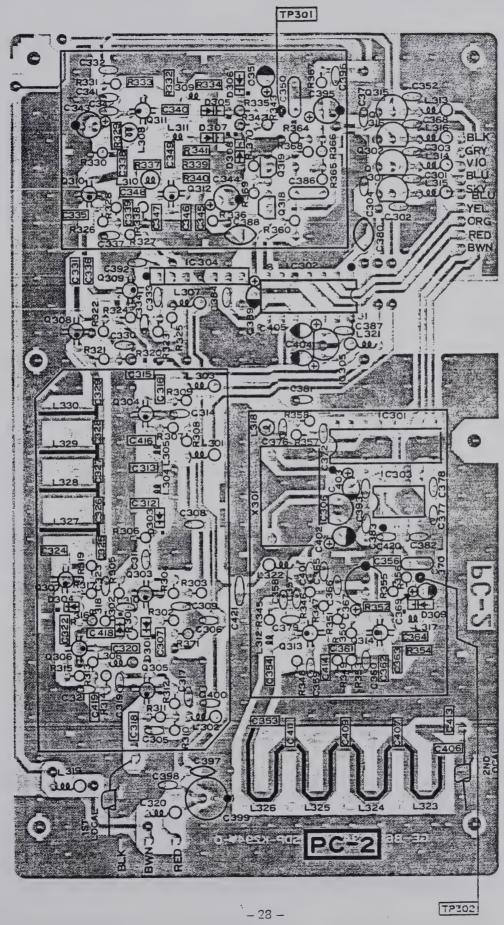
## CPU P.C. BOARD (TOP VIEW)



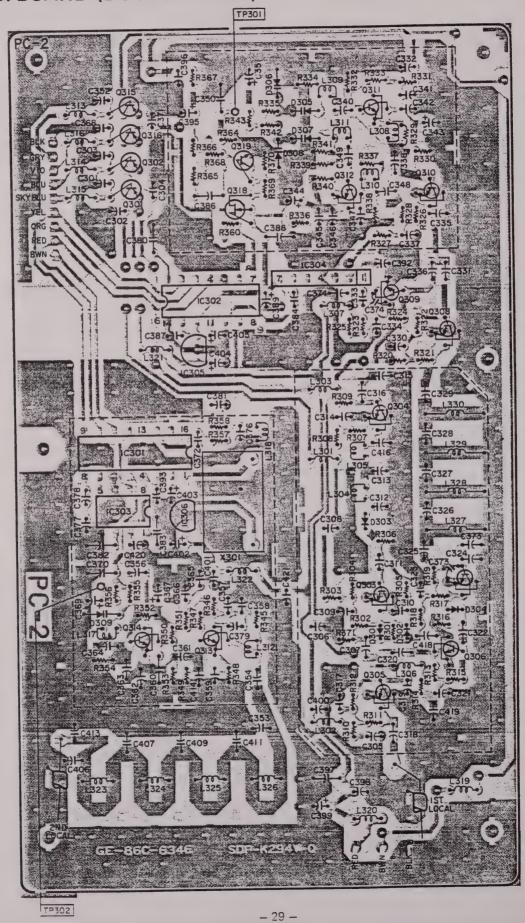
# CPU P.C. BOARD (BOTTOM VIEW)



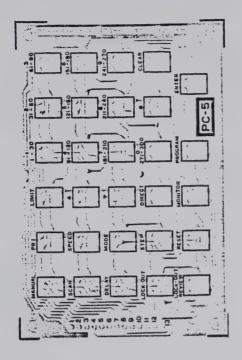
PLL P.C. BOARD (TOP VIEW)



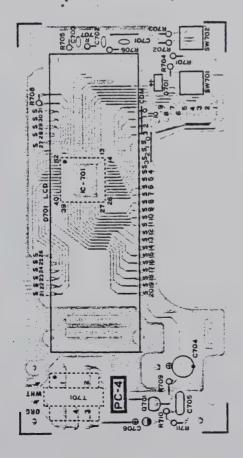
PLL P.C. BOARD (BOTTOM VIEW)



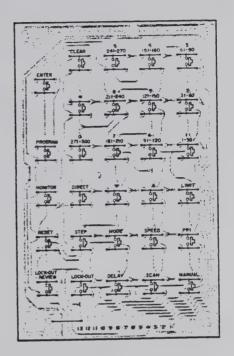
# KEY BOARD P.C. BOARD (TOP VIEW)



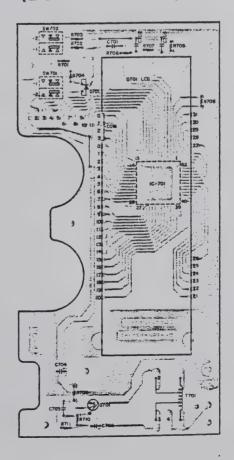
LCD P.C. BOARD (TOP VIEW)



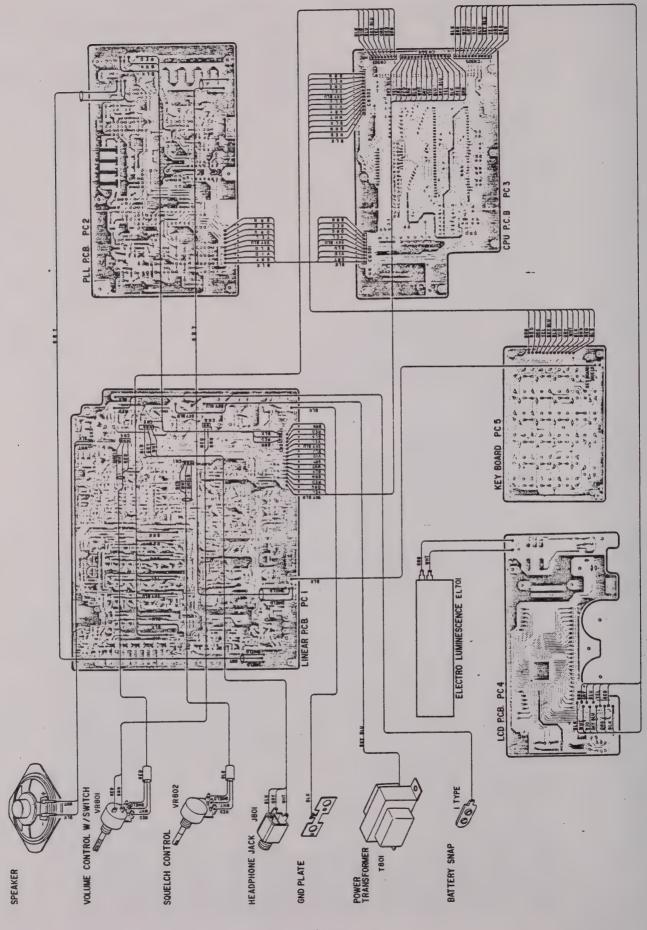
#### (BOTTOM VIEW)



#### (BOTTOM VIEW)



# WIRING DIAGRAM



#### **ELECTRICAL PARTS LIST**

**PRODUCT SAFETY NOTE:** Products marked with a  $\triangle$  have special characteristics important to safety. Before replacing any of these components, read carefully the product safety notice of this service manual. Don't degrade the safety of the product through improper servicing.

CAPACITORS						
Ref. No.		Descrip	ition	RS Part Number	MFR's Part Number	
C1	Chip	0.001μF	50WV	±10%	CD-102KJBC	T1C3K31P1HC102K
C2	Electrolytic	10μF	16WV	±20%	CC-106MDCA	16MV100SS
C3	Chip	5pF	50WV	±0.5pF	CD-050CJBC	C2C31P1HCG050D
C4	Chip	0.5pF	50WV	±0.25pF	CD-0X5CJBC	C2C31P1HCG0R5C
C5	Chip	2pF	50WV	±0.5pF	CD-020DJBC	C2C31P1HCG020D
C6	Chip	0.5pF	50WV	±0.25pF	CD-0X5CJBC	C2C31P1HCG0R5C
C7	Chip	2pF	50WV	±0.5pF	CD-020DJBC	C2C31P1HCG020D
C8	Chip	0.5pF	50WV	±0.25pF	CD-0X5CJBC	C2C31P1HCG0R5C
C9	Chip	2pF	50WV	±0.5pF	CD-020DJBC	C2C31P1HCG020D
C10	Chip	0.5pF	50WV	±0.25pF	CD-0X5CJBC	C2C31P1HCG0R5C
C11	Chip	2pF	50WV	±0.5pF	CD-020DJBC	C2C31P1HCG020D
C12	Chip	0.5pF	50WV	±0.25pF	CD-0X5CJBC	C2C31P1HCG0R5C
C13	Chip	5pF	50WV	±0.5pF	CD-050CJBC	C2C31P1HCG050D
C14	Chip	0.001µF	50WV	±10%	CD-102KJBC	C3K31P1HC102K
C15	Chip	0.001µF	50WV	±10%	CD-102KJBC	C3K31P1HC102K
C16	Chip	12pF	50WV	±5%	CD-120JJBC	C2C31P1HCG120J
C17	Chip	6pF	50WV	±0.5pF	CD-060DJBC	C2C31P1HCG060D
C18	_ `	6pF	50WV	±0.5pF	CD-060DJBC	C2C31P1HCG060D
C19	Chip	6pF	50WV	±0.5pF	CD-060DJBC	C2C31P1HCG060D
C20	Chip	12pF	50WV	±5%	CD-120JJBC	C2C31P1HCG120J
C21	Chip	5pF	50WV	±0.5pF	CD-050CJBC	C2C31P1HCG050D
C22 .	Chip	12pF	50WV	±5%	CD-120JJBC	- C2C31P1HCG120J
C23	Chip	15pF	50WV	±5%	CD-150JJBC	C2C31P1HCG150J
C24	Ćhip	12pF	50WV	±5%	CD-120JJBC	C2C31P1HCG120J
C25	Chip	10pF	50WV	±0.5pF	CD-100DJBC	C2C31P1HCG100D
C26	Chip	0.001µF	50WV	±10%	CD-120KJBC	C3K31P1HC102K
C27	Chip	0.001µF	50WV	±10%	CD-102KJBC	C3K31P1HC102K
C28	Chip	12pF	50WV	±5%	CD-120JJBC	C2C31P1HCG120J
C29	Chip	6pF	50WV	±0.5pF	CD-060DJBC	C2C31P1HCG060D
C30	Chip	6pF	50WV	±0.5pF	CD-060DJBC	C2C31P1HCG060D
C31	Chip	6pF	50WV	±0.5pF	CD-060DJBC	C2C31P1HCG060D
C32	Chip	12pF	50WV	±5%	CD-102JJBC	C2C31P1HCG120J
C33	Chip	8pF	50WV	±0.5pF	CD-080CJBC	C2C31P1HCG080D
C34	Chip	22pF	50WV	±5%	CD-220JJBC	C2C31P1HCG220J
C35	Chip	22pF	50WV	±5%	CD-220JJBC	C2C31P1HCG220J
C36	Chip	22pF	50WV	±5%	CD-220JJBC	C2C31P1HCG220J
C37	Chip	8pF	50WV	±0.5pF	CD-080CJBC	C2C31P1HCG080D
C38	Chip	0.001µF	50WV	±10%	CD-102KJBC	C3K31P1HC102K
C39	Chip	0.001μF	50WV	±10%	CD-102KJBC	C3K31P1HC102K
C40	Chip	27pF	50WV	±5%	CD-270JJBC	C2C31P1HCG270J
C41	Chip	12pF	50WV	±5%	CD-120JJBC	C2C31P1HCG120J
C42	Chip	12pF	50WV	±5%	CD-120JJBC	C2C31P1HCG120J
C43	Chip	12pF	50WV	±5%	CD-120JJBC	C2C31P1HCG120J
C44	Chip	27pF	50WV	±5%	CD-12033BC	C2C31P1HCG270J
C45	Chip	22pF	50WV	±5%	CD-27033BC	C2C31P1HCG220J
C46 .	Chip	39pF	50WV	±5%	CD-390JJBC	C2C31P1HCG390J
C47	Chip	47pF	50WV	±5%	CD-39033BC	C2C31P1HCG470J
C48	Chip	39pF	50WV	±5%	CD-390JJBC	C2C31P1HCG390J
C49	Chip	22pF	50WV	±5%	CD-39033BC	C2C31P1HCG220J
C50	Chip	0.001µF	50WV	±10%	CD-102KJBC	C3K31P1HC102K
C51	Chip	0.001µF	50WV	±10%	CD-102KJBC	C3K31P1HC102K
C52	Chip	39pF	50WV	±5%	CD-390JJBC	C2C31P1HCG390J
302	J	000	3011		05-3300300	J25511 1115 G3566

Ref. No.		Description		RS Part Number	MFR's Part Number
C53	Chip	18pF	50WV ±5%	CD-180JJBC	C2C31P1HCG180J
C54	Chip	18pF	50WV ±5%	CD-180JJBC	C2C31P1HCG180J
C55	Chip	18pF	50WV ±5%	CD-180JJBC	C2C31P1HCG180J
C56	Chip	39pF	50WV ±5%	CD-390JJBC	C2C31P1HCG390J
C57	Chip	33pF	50WV ±5%	CD-330JJBC	C2C31P1HCG330J
C58	Chip	68pF	50WV ±5%	CD-680JJBC	C2C31P1HCG680J
C59	Chip	68pF	50WV ±5%	CD-680JJBC	C2C31P1HCG680J
C60	Chip	68pF	50WV ±5%	CD-680JJBC	C2C31P1HCG680J
C61	Chip	22pF	50WV ±5%	CD-220JJBC	C2C31P1HCG220J
C62	Chip	0.001µF	50WV ±10%	CD-102KJBC	C3K31P1HC102K
C63	Chip	0.001µF	50WV ±10%	CD-102KJBC	C3K31P1HC102K
C64	Chip	68pF	50WV ±5%	CD-680JJBC	C2C31P1HCG680J
C65	Chip	27pF	50WV ±5%	CD-270JJBC	C2C31P1HCG270J
C66	Chip	27pF	50WV ±5%	CD-270JJBC	C2C31P1HCG270J
C67	Chip	68pF	50WV ±5%	CD-680JJBC	C2C31P1HCG680J
C68	Chip	47pF	50WV ±5%	CD-470JJBC	C2C31P1HCG470J
C69	Chip	100pF	50WV ±5%	CD-101JJBC	C2C31P1HCG101J
C70	Chip	100pF	50WV ±5%	CD-101JJBC	C2C31P1HCG101J
C71	Chip	100pF	50WV ±5%	CD-101JJBC	C2C31P1HCG101J
C72	Chip	27pF	50WV ±5%	CD-270JJBC	C2C31P1HCG270J
C73	Chip	0.001µF	50WV ±10%	CD-102KJBC	C3K31P1HC102K
C74	Chip	0.001µF	50WV ±10%	CD-102KJBC	C3K31P1HC102K
C75	Chip	220pF	50WV ±5%	CD-221JJBC	C2C31P1HCG221J
C76	Chip	47pF .	50WV ±5%	CD-470JJBC	C2C31P1HCG470J
C77	Chip	68pF	50WV ±5%	CD-680JJBC	C2C31P1HCG680J
C78	Chip	68pF	50WV ±5%	CD-680JJBC	C2C31P1HCG680J
C79 <sup>-</sup>	Chip	150pF	50WV ±5%	CD-151JJBC	C2C31P1HCG151J
C80	Chip ·	· 20pF	50WV ±5%	CD-200JJBC	C2C31P1HCG200J
C81	Chip	150pF	50WV ±5%	CD-151JJBC	C2C31P1HCG151J
C82	Chip	20pF	50WV ±5%	CD-200JJBC	C2C31P1HCG200J
C83	Chip	150pF	50WV ±5%	CD-151JJBC	C2C31P1HCG151J
C84	Chip	20pF	50WV ±5%	CD-200JJBC	C2C31P1HCG200J
C85	Chip	47pF	50WV ±5%	CD-470JJBC	C2C31P1HCG470J
C86	Chip	0.001μF	50WV ±10%	CD-102KJBC	C3K31P1HC102K
C87	Chip	0.001μF	50WV ±10%	CD-102KJBC	C3K31P1HC102K C3K31P1HC103K
C88	Chip	0.01μF	50WV ±10%	CD-103KJBC	C2C31P1HCG101J
C89	Chip	100pF	50WV ±5%	CD-101JJBC CD-100DJBC	C2C31P1HCG100D
C90	Chip	10pF	50WV ±0.5pF	CD-100D3BC	C2C31P1HCG101J
C91	Chip	100pF	50WV ±5% 50WV ±0.5pF	CD-040CJBC	C2C31P1HCG040D
C92	Chip	4pF	•	CD-100DJBC	C2C31P1HCG100D
C93	Chip	10pF		CD-100D3BC	C3K31P1HC102K
C94	Chip	0.001μF 5pF	50WV ±10% 50WV ±0.5pF	CD-050CJBC	C2C31P1HCG050D
C95	Chip	100pF	50WV ±5%	CD-101JJBC	C2C31P1HCG101J
C96	Chip	6pF	50WV ±0.5pF	CD-060DJBC	C2C31P1HCG060D
C97	Chip Chip	2pF	50WV ±0.5pF	CD-020DJBC	C2C31P1HCG020D
C98	Chip	100pF	50WV ±5%	CD-101JJBC	C2C31P1HCG101J
C99 C100	Chip	100pF	50WV ±5%	CD-101JJBC	C2C31P1HCG101J
C100	Chip	0.001µF	50WV ±10%	CD-102KJBC	C3K31P1HC102K
C102	Chip	33pF	50WV ±5%	CD-330JJBC	C2C31P1HCG330J
C102	Chip	0.001μF	50WV ±10%	CD-102KJBC	C3K31P1HC102K
C103	Chip	22pF	50WV ±5%	CD-220JJBC	C2C31P1HCG220J
C105	Chip	0.01µF	50WV ±10%	CD-103KJBC	C3K31P1HC103K
C106	Chip	470pF	50WV ±5%	CC-471 JJBC	C2C31P1HCG471J
C107	Chip	33pF	50WV ±5%	CD-330JJBC	C2C31P1HCG330J
C108	Chip	33pF	50WV ±5%	CD-330JJBC	C2C31P1HCG330J
C109	Chip	22pF	50WV ±5%	CD-220JJBC	C2C31P1HCG220J

Ref. No.		Description	1	RS Part Number	MFR's Part Number	
C110	Chip	10pF	50WV	±0.5pF	CD-100DJBC	C2C31P1HCG100D
C111	Chip	0.001µF	50WV	±10%	CD-102KJBC	C3K31P1HC102K
C112	Chip	5pF	50WV	±0.5pF	CC-050CJBC	C2C31P1HCG050D
		18pF				
C113	Chip		50WV	±5%	CD-180JJBC	C2C31P1HCG180J
C114	Chip	0.001μF	50WV	±10%	CD-102KJBC	C3K31P1HC102K
C115	Chip	33pF	50WV	±5%	CC-330JJBC	C2C31P1HCG330J
C116	Ceramic	0.001µF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C117	Ceramic	0.001μF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C118	Electrolytic	10μF	16WV	±20%	CC-106MDCA	16MV100HA
C119	Electrolytic	33µF	16WV	±20%	CC-336MDCA	16MV330HA
C120	Chip	2pF	50WV	±0.5pF	CD-020DJBC	C2C31P1HCG020D
C121	Ceramic	0.001μF	50WV	±10%		HE50SJYB102K
					CC-102KJBC	
C122	Ceramic	10pF	50WV	±0.5pF	CC-100DJBC	HE40SJSL100D
C123	Ceramic	10pF	50WV	±10%	CC-100DJBC	HE40SJUJ100K
C124	Ceramic	1pF	50WV	±0.5pF	CC-010CJBC	HE40SJCH010D
C125	Ceramic	10pF	50WV	±10%	CC-100DJBC	HE40SJUJ100K
C126	Ceramic	0.001µF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C127	Ceramic	0.001µF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C128	Ceramic	10pF	50WV	±0.5pF	CC-100DJBC	HE40SJSL100D
C129	Chip	2pF	50WV	±0.5pF		C2C31P1HCG020D
					CC-020DJBC	
C130	Ceramic	22pF	50WV	±10%	CC-220KJBC	HE40SJSL220K
C131	Ceramic	56pF	50WV	±10%	CC-560JJBC	HE40SJSL560K
C132	Ceramic	0.001μF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C133	Ceramic	0.001μF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C134	Ceramic	0.001μF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C135	Ceramic	0.001µF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C136	Ceramic	0.001µF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C137	Mylar*	0.047μF	50WV	±10%		AK1-UU473K50
		•			CC-473KJBM	
C138	Mylar	0.047μF	50WV	±10%	CC-473KJBM	AK1-UU473K50
C139	Mylar	0.1μF	50WV	±10%	CC-104KJBM	AK1-UU104K50
C140	Ceramic	470pF	50WV	±10%	CC-471KJBC	HE40SJYB471K
C141	Ceramic	100pF	50WV	±10%	CC-101KJBC	HE40SJYB101K
C142	Ceramic	470pF	50WV	±10%	CC-471KJBC	HE40SJYB471K
C143	Mylar	0.0022µF	50WV	±10%	CC-222KJBM	AK1-UU222K50
C144	Electrolytic	10μF	16WV	±20%	CC-106MDCA	16MV100HA
C145	Ceramic	47pF	50WV	±10%	CC-470KJBC	HE40SJSL470K
C146				±10%		
	Mylar	0.047μF	50WV		CC-473KJBM	AK1-UU473K50
C147	Ceramic	470pF	50WV	±10%	CC-471KJBC	HE40SJYB471K
C148	Electrolytic	1μF	50WV	±20%	CC-105MJBA	50MV010HA
C149	Electrolytic	10μF	16WV	±20%	CC-106MDCA	16MV100HA
C150	Ceramic	0.01µF	50WV	+80%-20%	CC-103ZJBC	HE70SJYF103Z
C151	Electrolytic	1μF	50WV	±20%	CC-105MJBA	50MV010HA
C152	Electrolytic	10μF	16WV	±20%	CC-106MDCA	16MV100HA
C153	Mylar	0.056μF	50WV	±10%	CC-563KJBM	AK1-UU563K50
C153	Electrolytic	0.036μF 22μF		±20%		
	1 '		16WV		CC-226MDCA	16MV220HA
C155	Electrolytic	1μF	50WV	±20%	CC-105MJBA	50MV010HA
C156	Electrolytic	1μF	50WV	±20%	CC-105MJBA	50MV010HA
C157	Ceramic	33pF	50WV	±10%	CC-330KJBC	HE40SJSL330K
C158	Not used					
C159	Not used					
C160	Not used					
C161	Ceramic	0.001μF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C162	Ceramic	0.001μF	50WV	+80%20%	CC-103ZJBC	HE70SJYF103Z
C162					1	
	Ceramic	0.01μF	50WV	+80%20%	CC-103ZJBC	HE70SJYF103Z
C164	Ceramic	0.001μF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C165	Ceramic	0.001μF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C166	Ceramic	0.01µF	50WV	+80%-20%	CC-103ZJBC	HE70SJYF103Z

<sup>\*</sup> Mylar is a registered trademark of E.I. Du Pont de Nemours and Company.

Ref. No.		Description	1	RS Part Number	MFR's Part Number	
C167	Ceramic	0.001μF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C168	Ceramic	10pF	50WV	±10%	CC-100DJBC	HE40SJUJ100K
C169	Ceramic	0.001μF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C170	Ceramic	33pF	50WV	±10%	CC-330KJBC	HE40SJSL330K
	Ceramic	10pF	50WV	±0.5pF	CC-100DJBC	HE40SJSL100D
C171	Ceramic	0.001μF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C172			50WV	±0.5pF	CC-100DJBC	HE40SJSL100D
C173	Ceramic	10pF	35WV	±20%	CC-474MGBT	DN1VR47M1S
C174	Tantalum	0.47μF			CC-473ZJBC	HE13SJYF473Z
C175	Ceramic	0.047μF	50WV	+80%-20%	1	DN1VOR1M1S
C176	Tantalum	0.1μF	35WV	±20%	CC-104MGBT	
C177	Ceramic	0.01μF	50WV	+80%-20%	CC-103ZJBC	HE70SJYF103Z
C178	Electrolytic	220µF	16WV	±20%	CC-227MDCA	16MV221HA
C179	Ceramic	10pF	50WV	±0.5pF	CC-100DJBC	HE40SJSL100D
C180	Chip	5pF	50WV	±0.5pF	CD-050DJBC	C2C31P1HCG050D
C181	Tantalum	0.22µF	35WV	±20%	CC-224MGBT	DN1VR22M1S
C182	Mylar	0.01µF	50WV	±10%	CC-103KJBM	AK1-UU103K50
	Ceramic	5pF	50WV	±0.5pF	CC-050CJBC	HE40SJSL050D
C183		0.0068μF	50WV	±10%	CC-682KJBM	AK1-UU682K50
C184	Mylar		50WV	±10%	CC-471KJBC	HE40SJYB471K
C185	Ceramic	470pF		±10%	CC-471KJBC	HE40SJYB471K
C186	Ceramic	470pF	50WV		CC-104MGBT	DN1V0R1M1S
C187	Tantalum	0.1μF	35WV	±20%		
C188	Ceramic	0.01μF	50WV	+80%-20%	CC-103ZJBC	HE70SJYF103Z
C189	Mylar	0.047µF	50WV	±10%	CC-473KJBM	AK1-UU473K50
C190	Electrolytic	0.1μF	50WV	±20%	CC-104MJBA	50MVR10HA.
C191	Electrolytic	1μF	50WV	±20%	CC-105MJBA	50MV010HA
C192	Mylar	0.056µF	50WV	±10%	CC-563KJBM	AK1-UU563K50
C193	Electrolytic	0.1μF	50WV	±20%	CC-104MJBA	50MVR10HA
C194	Mylar	0.056µF	50WV	±10%	CC-563KJBM	AK1-UU563K50
C195	Electrolytic	4.7μF	25WV	±20%	CC-475MFBA	25MV4R7HA
	Tantalum	0.1μF	35WV	±20%	CC-104MGBT	DN1V0R1M1S
C196		0.01μF	50WV	+80%-20%	CC-103ZJBC	HE70SJYF103Z
C197	Ceramic			±20%	CC-105MJBA	50MV010HA
C198	Electrolytic	1μF	50WV		CC-331KJBC	HE40SJYB331K
C199	Ceramic	330pF	50WV	±10%		
C200	Mylar	0.082µF	50WV	±10%	CC-823KJBM	AK1-UU823K50
C201	Mylar	0.056µF	50WV	±10%	CC-563KJBM	AK1-UU563K50
C202	Mylar	0.0047µF	50WV	±10%	CC-472KJBM	AK1-UU472K50
C203	Mylar	0.047µF	50WV	±10%	CC-473KJBM	AK1-UU473K50
C204	Ceramic	0.0015µF	50WV	±10%	CC-152KJBC	HE60SJYB152K
C205	Mylar	0.0068µF	50WV	±10%	CC-682KJBM	AK1-UU682K50
C206	Mylar	0.0068µF	50WV	±10%	CC-682KJBM	AK1-UU682K50
C207	Mylar	0.047µF	50WV	±10%	CC-473KJBM	AK1-UU473K50
		2.2μF	50WV	±20%	CC-225MJBA	50MV2R2HA
C208	Electrolytic		50WV	+80%-20%	CC-103ZJBC	HE70SJYF103Z
C209	Ceramic	0.01μF			CC-105MJBA	50MV010SS
C210	Electrolytic	1μF	50WV	±20%	CC-108MFBA	25MV102HA
C211	Electrooytic	1000μF	25WV	±20%		
C212	Electrolytic	47μF	16WV	±20%	CC-476MDCA	16MV470SS
C213	Electrolytic	100μF	16WV	±20%	CC-107MDCA	16MV101HA
C214	Mylar	0.22µF	50WV	±10%	CC-224KJBM	AK1-UU224K50
C215	Electrolytic	10μF	16WV	±20%	CC-106MDCA	16MV100SS
C216	Electrolytic	2.2μF	50WV	±20%	CC-225MJBA	50MV2R2SS
C217	Electrolytic	10μF	50WV	±20%	CC-106MJBA	50MV100HA
C218	Electrolytic	33µF	16WV	±20%	CC-336MDCA	16MV330HA
C219	Ceramic	0.047μF	50WV	+80%-20%	CC-473ZJBC	HE13SJYF473Z
	Electrolytic	33µF	16WV	±20%	CC-336MDCA	16MV330HA
C220	1			±20%	CC-104MGBT	DN1V0R1M1S
C221	Tantalum	0.1μF	35WV		CC-334MGBT	DN1VR33M1S
C222	Tantalum	0.33μF	35WV	±20%		HE50SJYB102K
C223	Ceramic	0.001µF	50WV	±10%	CC-102KJBC	HESUSSITE TUZIN

Ref. No.		Description			RS Part Number	MFR's Part Number
				1000/		
C224	Electrolytic	220µF	16WV	±20%	CC-227MDCA	16MV221HA
C225	Mylar	0.033μF	50WV	±10%	CC-333KJBM	AK1-UU333K50
C226	Electrolytic	220μF	16WV	±20%	CC-227MDCA	16MV221HA
C227	Electrolytic	100μF	16WV	±20%	CC-107MDCA	16MV101HA
C228	Electrolytic	0.1μF	50WV	±20%	CC-104MJBA	50MVR10SS
C229	Electrolytic	0.1μF	50WV	±20%	CC-104MJBA	50MVR10SS
C230	Electrolytic	10µF	16WV	±20%	CC-106MDCA	16MV100HA
C231	Ceramic	0.01μF	50WV	+80%-20%	CC-103ZJBC	HE70SJYF103Z
C232	Not used	0.0 1,21		2010	00100200	
∆ C233	Electrolytic	2200µF	25WV	±20%	CC 229MEDA	25MV222HA
		•	25WV	±20%	CC-228MFBA	25MV471HA
C234	Electrolytic	470μF			CC-477MFBA	
C235	Chip	2pF	50WV	±0.5pF	CD-020DJBC	C2C31P1HCG020D
C236	Mylar	0.022μF	50WV	±10%	CC-273KJBM	AK1-UU223K50
C237	Chip	0.001μF	50WV	±10%	CD-102KJBC	C3K31P1HC102K
C238	Chip	5pF	50WV	±0.5pF	CD-050CJBC	C2C31P1HCG050D
C239	Not used					
C240	Electrolytic	33μF	16WV	±20%	CC-336MDCA	16MV330HA
C241	Chip	0.001μF	50WV	±10%	CD-102KJBC	C3K31P1HC102K
C242	Electrolytic	1μF	50WV	±20%	CC-105MJBA	50MV010HA
•	1		50WV	±20%		50MV010HA
C243	Electrolytic	1μF			CC-105MJBA	
C244	Electrolytic	1μF	50WV	±20%	CC-105MJBA	50MV010HA
C245	Electrolytic	1μF	50WV	±20%	CC-105MJBA	50MV010HA
C246	Electrolytic	1μF	50WV	±20%	CC-105MJBA	50MV010HA
C247	Electrolytic	1μF	50WV	±20%	CC-105MJBA	50MV010HA
C248	Electrolytic	1μF	50WV	±20%	CC-105MJBA	50MV010HA
C301 .	Ceramic	0.001µF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C302	Ceramic	0.001µF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C303	Ceramic	0.001µF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C304	Ceramic	0.001µF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C305	Ceramic	0.001µF	50WV	±10%	CC-102KJBC	HE50SJYB102K
		•	50WV	±10%		HE50SJYB102K
C306	Ceramic	0.001μF			CC-102KJBC	C2C31P1HCG020D
C307	Chip	2pF	50WV	±0.5pF	CD-020DJBC	
C308	Ceramic	0.001μF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C309	Ceramic	0.001μF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C310	Ceramic	0.001μF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C311	Ceramic	5pF	50WV	±0.5pF	CC-050CJBC	HE40SJSL050D
C312	Chip	3pF	50WV	±0.5pF	CD-030CJBC	C2C31P1HCG030D
C313	Chip	5pF	50WV	±0.5pF	CD-050CJBC -	C2C31P1HCG050D
C314	Ceramic	0.001μF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C315	Chip	4pF	50WV	±0.5pF	CD-040CJBC	C2C31P1HCG040D
C316	Chip	10pF	50WV	±0.5pF	CD-100DJBC	C2C37P1HCG100D
		0.001μF	50WV	±10%	1	HE50SJYB102K
C317	Ceramic				CC-102KJBC	C2C31P1HCG050D
C318	Chip	5pF	50WV	±0.5pF	CD-050CJBC	
C319	Ceramic	1pF	50WV	±0.5pF	CC-010CJBC	HE40SJSL010D
C320	Chip	5pF	50WV	±0.5pF	CD-050CJBC	C2C31P1HCG050D
C321	Ceramic	0.001μF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C322	Chip	1pF	50WV	±0.25pF	CD-010CJBC	C2C31P1HCG010C
C323	Ceramic	0.001μF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C324	Chip	0.5pF	50WV	±0.25pF	CD-0X5CJBC	C2C31P1HCG0R5C
C325	Chip	2pF	50WV	±0.5pF	CD-020DJBC	C2C31P1HCG020D
C326	Chip	1pF	50WV	±0.25pF	CD-010CJBC	C2C31P1HCG010C
			50WV	±0.25pF	CD-010CJBC	C2C31P1HCG010C
C327	Chip	1pF			1 1	C2C31P1HCG010C
C328	Chip	1pF	50WV	±0.25pF	CD-010CJBC	
C329	Chip	2pF	50WV	±0.5pF	CD-020DJBC	C2C31P1HCG020D
C330	Ceramic	0.001μF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C331	Chip	3pF	50WV	±0.5pF	CD-030CJBC	C2C31P1HCG030D
C332	Ceramic	0.001µF	50WV	±10%	CC-102KJBC	HE50SJYB102K

Ref. No.		Description			RS Part Number	MFR's Part Number
2333	Ceramic	5pF	50WV :	±0.5pF	CC-050CJBC	HE40SJSL050D
	Ceramic	0.001µF		±10%	CC-102KJBC	HE50SJYB102K
2334		•		±0.5pF	CD-020DJBC	C2C31P1HCG020D
2335	Chip	2pF			CD-020DJBC	C2C31P1HCG020D
2336	Chip	2pF		±0.5pF		
C337	Ceramic	0.001µF		±10%	CC-102KJBC	HE50SJYB102K
C338	Chip	5pF	50WV :	±0.5pF	CD-050CJBC	C2C31P1HCG050D
C339	Not used					
		22-5	50WV :	±0.5pF	CD-220DJBC	C2C31P1HCG220D
C340	Chip	22pF			CC-220KJBC	HE40SJSL220K
2341	Ceramic	22pF		±10%		HE50SJYB102K
2342	Ceramic	0.001µF		±10%	CC-102KJBC	
2343	Electrolytic	10μF	16WV :	±20%	CC-106MDCA	16MV100HA
2344	Electrolytic	10µF	16WV	±20%	CC-106MDCA	16MV100HA
		0.001µF		±10%	CD-102KJBC	C3K31P1HC102K
C345	Chip			±0.5pF	CD-220DJBC	C2C31P1HCG220D
C346	Chip	22pF				C2C31P1HCG020D
2347	Chip	2pF		±0.5pF	CD-020DJBC	
2348	Chip	5pF	50WV	±0.5pF	CD-050CJBC	C2C31P1HCG050D
2349	Chip	10pF	50WV	±0.5pF	CD-100DJBC	C2C31P1HCG100D
		0.047µF		±10%	CC-473KJBM	AK1-UU473K50
2350	Mylar			±20%	CC-104MGBT	DN1V0R1M1S
2351	Tantalum	0.1µF	-			HE50SJYB102K
C352	Ceramic	0.001µF		±10%	CC-102KJBC	
C353	Chip	4pF	50WV	±0.5pF	CD-040CJBC	C2C31P1HCG040D
C354	Chip	10pF	50WV	±0.5pF	CD-100DJBC	C2C31P1HCG100D
	1 '	TOPI	00111			
C355	Not used		CO14/1/	10 0F-F	CD-0X5CJBC	C2C31P1HCG0R5C
C356	Chip	0.5pF		±0.25pF	CC-330KJBC	HE40SJSL330K
C357	Ceramic	33pF		±10%	1	
C358	Ceramic	0.001µF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C359	Ceramic	0.001µF	50WV	±10%	CC-102KJBC	HE50SJYB102K
	Ceramic	100pF		±10%	CC-101KJBC	HE50SJSL101K
C360				±0.5pF	CD-020DJBC	C2C31P1HCG020D
C361	Chip	2pF				C2C31P1HCG060D
C362	Chip	6pF		±0.5pF	CD-060DJBC	
C363	Chip	10pF	50WV	±0.5pF	CD-100DJBC	C2C31P1HCG100D
C364	Chip	10pF	50WV	±0.5pF	CD-100DJBC	C2C31P1HCG100D
C365	Ceramic	33pF	50WV	±10%	CC-330KJBC	HE40SJSL330K
			50WV	±10%	CC-102KJBC	HE50SJYB102K
C366	Ceramic	0.001μF			CC-227MDCA	16MV221HA
C367	Electrolytic	220μF	16WV	±20%		1
C368	Ceramic	0.001µF	50WV	±10%	CD-102KJBC	HE50SJYB102K
C369	Tantalum	0.47µF	35WV	±20%	CC-474MGBT	DN1VR47M1S
C370	Mylar	0.047µF	50WV	±10%	CC-473KJBM	AK1-UU473K50
	1		50WV	±10%	CC-102KJBC	HE50SJYB102K
C371	Ceramic	0.001µF			CC-102KJBC	HE50SJYB102K
C372	Ceramic	0.001μF	50WV	±10%	1	C2C31P1HCG010C
C373	Chip	1pF	50WV	±0.25pF	CD-010CJBC	
C374	Chip	5pF	50WV	±0.5pF	CD-050CJBC	C2C31P1HCG050D
C375	Not used					
	Ceramic	22pF	50WV	±10%	CC-220KJBC	HE40SJSL220K
C376			50WV	±0.5pF	CC-050CJBC	HE40SJSL050D
C377	Ceramic	5pF		•	CC-102KJBC	HE50SJYB102K
C378	Ceramic	0.001µF	50WV	±10%	1	1
C379	Ceramic	100pF	50WV	±10%	CC-101KJBC	HE50SJSL101K
C380	Ceramic	0.01µF	50WV	+80%-20%	CC-103ZJBC	HE70SJYF103Z
C381	Ceramic	0.001µF	50WV	±10%	CC-102KJBC	HE50SJYB102K
		0.001μ1 0.0022μF	50WV	±10%	CC-222KJBC	HE60SJYB222K
C382	Ceramic	•			CC-103ZJBC	HE70SJYF103Z
C383	Ceramic	0.01µF	50WV	+80%-20%		1
C384	Ceramic	0.001µF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C385	Not used					
C386	Mylar	0.047µF	50WV	±10%	CC-473KJBM	AK1-UU473K50
		0.001μF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C387	Ceramic			+80%-20%	CC-103ZJBC	HE70SJYF103Z
C388	Ceramic	0.01µF	50WV	±20%	CC-104MGBT	DN1V0R1M1S
C389	Tantalum	0.1µF	35WV			

Ref. No.		Description	1		RS Part Number	MFR's Part Number
C390	Not used			-		
C391	Not used	• /				
C392	Ceramic	0.001µF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C393	Ceramic	0.001µF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C394	Not used					
C395	Electrolytic	10µF	50WV	±20%	CC-106MJBA	50MV100HA
C396	Ceramic	0.001µF	50WV	±10%	CC-102KJBC	HE50SJYB102K
	Ceramic	0.001µF	50WV	+80%-20%	CC-102R3BC	HE70SJYF103Z
C397						HE50SJYB102K
C398	Ceramic	0.001µF	50WV	±10%	CC-102KJBC	
C399	Electrolytic	220µF	16WV	±20%	CC-227MDCA	16MV221HA
C400	Ceramic	0.001µF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C401	Ceramic	0.001µF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C402	Tantalum	0.33µF	35WV	±20%	CC-334MGBT	DN1VR33M1S
C403	Tantalum	0.1μF	35WV	±20%	CC-104MGBT	DN1V0R1M1S
C404	Tantalum	0.33μF	35WV	±20%	CC-334MGBT	DN1VR33M1S
C405	Tantalum	0.1μF	35WV	±20%	CC-104MGBT	DN1V0R1M1S
C406	Chip	4pF	50WV	±0.5pF	CD-040CJBC	C2C31P1HCG040D
C407	Chip	3pF	50WV	±0.5pF	CD-030CJBC	C2C31P1HCG030D
		эрг	50 W V	±0.5pr	05-0300050	626311 111646665
C408	Not used	0.5	50WV	105.5	CD COOD IDC	62621811660805
C409	Chip	8pF	50WV	±0.5pF	CD-080DJBC	C2C31P1HCG080D
C410	Not used					
C411	Chip	3pF	50WV	±0.5pF	CD-030CJBC	C2C31P1HCG030D
C412	Not used					
C413	Chip	1pF	50WV	±0.25pF	CD-010CJBC	C2C31P1HCG010C
C414	Chip	1pF	50WV	±0.25pF	CD-010CJBC	C2C31P1HCG010C
C415	Not used	·		·		
C416	Chip	3pF	50WV	±0.5pF	CD-030CJBC	C2C31P1HCG030D
C417	Not used					
C418	Chip	4pF	50WV	±0.5pF	CD-040CJBC	C2C31P1HCG040D
C419	Chip	4pF	50WV	±0.5pF	CD-040CJBC	C2C31P1HCG040D
C420	Ceramic	5pF	50WV	±0.5pF	CC-050CJBC	HE40SJSL050D
C420	Ceramic	0.001μF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C421	Ceramic	0.001μΓ	50 W V	10%	GC-102R3B0	1123033 7 5 10210
C501	Ceramic	0.01μF	50WV	+80%-20%	CC-103ZJBC	HE70SJYF103Z
C502	Ceramic	0.01μF	50WV	+80%-20%	CC-103ZJBC	HE70SJYF103Z
C503	Ceramic	0.01µF	50WV	+80%-20%	CC-103ZJBC	HE70SJYF103Z
C503		100pF	50WV	±10%	CC-101KJBC	HE40SJYB101K
	Ceramic				CC-101KJBC	HE40SJYB101K
C505	Ceramic	100pF	50WV	±10%		
C506	Ceramic	100pF	50WV	±10%	CC-101KJBC	HE40SJYB101K
C507	Ceramic	100pF	50WV	±10%	CC-101KJBC	HE40SJYB101K
C508	Ceramic	$0.001 \mu$ F	50WV	±10%	CC-102KJBC	- HE50SJYB102K
C509	Ceramic	0.001µF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C510	Ceramic	0.001μF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C511	Ceramic	0.001µF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C512	Electrolytic	4.7μF	25WV	±20%	CC-475MFBA	25MV4R7HA
C513	Not used	,=-	20			
C514	Not used					
C514 .	Ceramic	0.001µF	50WV	±10%	CC-102KJBC	HE50SJYB102K
	1				CC-106MDCA	16MV100HA
C516	Electrolytic	10μF	16WV	±20%	CC-108MBCA CC-103ZJBC	HE70SJYF103Z
C517	Ceramic	0.01μF	50WV	+80%—20%		
C518	Ceramic	0.01μF	50WV	+80%—20%	CC-103ZJBC	HE70SJYF103Z
C519	Ceramic	100pF	50WV	±10%	CC-101KJBC	HE40SJYB101K
C701	Ceramic	0.01µF	50WV	+80%-20%	CC-103ZJBC	HE70SJYF103Z
C702	Ceramic	0.01µF	50WV	+80%-20%	CC-103ZJBC	HE70SJYF103Z
C703	Ceramic	0.01µF	50WV	+80%-20%	CC-103ZJBC	HE70SJYF103Z
C704	Electrolytic	100μF	16WV	±20%	CC-107MDCA	16MV101SS
C705	Mylar	0.047µF	50WV	±10%	CC-473KJBM	AK1-UU473K50
C706	Tantalum	6.8µF	10WV	±20%	CC-685MCBT	DN1A6R8M1S

CAPACITOR ARRAY						
Ref. No.	Descript	ion		RS Part Number	MFR's Part Number	
CA501 CA502 CA503 CA504 CB1 CB2	0.001µFx8 100pFx6 100pFx12 100pFx12 0.01µFx2 0.01µFx2	50WV 50WV 50WV 50WV 250V	+80%-20% ±20% ±20% ±20% +80%-20% +80%-20%	C-1814 C-1815 C-1815 CA-1816 CA-1816	EXF-P8102ZF EXF-P6101MF EXF-P12101MF EXF-P12101MF EXR-FS203ZS EXR-FS203ZS	

	DIODE						
Ref. No.	Description	1	RS Part Number	MFR's Part Number			
D1		(Silicon)	DX-2771	1SS241			
D2		(Silicon)	DX-2771	1SS241			
D3		(Silicon)	DX-2771	1SS241			
D4		(Silicon)	DX-2771	1SS241			
D5		(Silicon)	DX-2771	1SS241			
D6		(Silicon)	DX-2771	1SS241			
D7 .		(Silicon)	DX-2771	1SS241			
D8		(Silicon)	DX-2771	1SS241			
D9	1SS241	(Silicon)	DX-2771	1SS241			
D10		(Silicon)	DX-2771	1SS241			
D11		(Silicon)	DX-2771	1SS241			
D12	1SS241	(Silicon)	DX-2771	1SS241			
D13	1SS241	(Silicon)	DX-2771	1SS241			
D14	1SS241	(Silicon)	DX-2771	1SS241			
D15	1SS241	(Silicon)	DX-2771	1SS241			
D16	1SS241	(Silicon)	DX-2771	1SS241			
D17	1SS241	(Silicon)	DX-2771	1SS241			
D18	1SS241	(Silicon)	DX-2771	1SS241			
D19	1SS241	(Silicon)	DX-2771	1SS241 1SS241			
D20	1SS241	(Silicon)	DX-2771				
D21	1SS241	(Silicon)	DX-2771	1\$\$241 1\$\$241			
D22	1SS241	(Silicon)	DX-2771	1SS241			
D23	1SS241	(Silicon)	DX-2771	1SS241			
D24	1SS241	(Silicon)	DX-2771	1SS241			
D25	1SS241	(Silicon)	DX-2771	1SS241			
D26	1SS241	(Silicon)	DX-2771	155241 155241			
D27	1SS241	(Silicon)	DX-2771	ND487C1-3R			
D28	ND487C1-3R		DX-2773	1SS241			
D29	1SS241	(Silicon)	DX-2771	1SS241			
D30	1SS241	(Silicon)	DX-2771	0A90-R			
D31	OA90-R	(Germanium)	DX-2772	OA90-R			
D32	OA90-R	(Germanium)	DX-2772	OA90-R			
D33	OA90-R	*	DX-1056	1S2076A			
D34	1S2076A	(Silicon)	DX-1056	1S2076A			
D35	1S2076A 1S2076A	(Silicon) (Silicon)	DX-1056	1S2076A			
D36	132U70A	(Onicon)	DX 1000				

Ref. No.		Description		RS Part Number	MFR's Part Number
D37		1S2076A	(Silicon)	DX-1056	1S2076A
D38		1S2076A	(Silicon)	DX-1056	1S2076A
D39			(Silicon)	DX-1056	1S2076A
D40			(Silicon)	DX-1056	1S2076A
D41			(Silicon)	DX-1056	1S2076A
D41			(Silicon)	DX-1056	1S2076A
D42			(Silicon)	DX-1056	1S2076A
D43		1S2076A	(Silicon)	DX-1056	1S2076A
D44		1S2076A	(Silicon)	DX-1056	1S2076A
		1S2076A	(Silicon)	DX-1056	1S2076A
D46		1S2076A	(Silicon)	DX-1056	1S2076A
D47			(Silicon)	DX-1056	1S2076A
D48	_		(Silicon)	DX-2774	HZ6B2L
D49	Zener	HZ6B2L	(Silicon)	DX-2009	HZ9B2L
D50	Zener	HZ9B2L		DX-1056	1S2076A
D51		1S2076A	(Silicon)	DX-1636	. HZ11B2L
D52	Zener	HZ11B2L	(Silicon)	DX-2007	1S2076A
D53		1S2076A	(Silicon)	DX-1030	SR1K-2
D54		SR1K-2	(Silicon)	DX-0473	184841
D55	Rectifier	184841	(Silicon)	DX-2513	1S1585
D56		1S1585	(Silicon)	1	1S1585
D57		1S1585	(Silicon)	DX-0636	131303
D301		155241	(Silicon)	DX-2771	1SS241
D301		1SS241	(Silicon)	DX:2771	1SS241
		1SS241	(Silicon)	DX-2771	1SS241
D303		1SS241	(Silicon)	DX-2771	1SS241
D304	Varantar	1T25(5/6/7)	(Silicon)	DX-2775	1T25(5/6/7)
D305	Varactor	1T25(5/6/7)	(Silicon)	DX-2775	1T25(5/6/7)
D306	Varactor	1T25(5/6/7)	(Silicon)	DX-2775	1T25(5/6/7)
D307	Varactor	1T25(5/6/7)	(Silicon)	DX-2775	1T25(5/6/7)
D308	Varactor		(Silicon)	DX-0139	1SV89
D309	Varactor	1SV89	(Silicon)	DX-1056	1S2076A
D501		1S2076A		DX-1056	1S2076A
D502		1S2076A	(Silicon)	DX-1056	1S2076A
D503		1S2076A	(Silicon)	DX-1056	1S2076A
D504		1S2076A	(Silicon)	DX-1056	1S2076A
D505		1S2076A	(Silicon)	DX-1056	1S2076A
D506		1S2076A	(Silicon)	DX-1056	1S2076A
D507		1S2076A	(Silicon)	DX-1056	1S2076A
D508		1S2076A	(Silicon)	DX-1056	1S2076A
D509		1S2076A	(Silicon)	DX-1020	1520707
D510	Not used		•		0
D511	Not used				
D512 <sup>†</sup>	Not used				
D512	Not used				
D513	Not used				
D514	1101 0000	1S2076A	(Silicon)	DX-1056	1S2076A
D515	LED	TLR-208		L-0066	TLR-208
0/01					

<sup>†</sup> See Appendix (page 54) for ITI models.

INTEGRATED CIRCUITS						
Ref. No.		Description		RS Part Number	MFR's Part Number	
IC1	KB4419A	(IF Amp/Det)	(Bipolar) Linear	MX-7474	KB4419A	
IC2	TK10420	(IF Amp/Quad/Det)	(Bipolar) Linear	MX-4012	TK10420	
IC3	HD14011BP	(Switching)	(C-MOS) Logic	MX-5444	HD14011B	
IC4	HD14066BP	(Switching/Mute)	(C-MOS)	MX-5805	HD14066BP	
IC5	μPC324C	(Amp)	(Bipolar)	MX-4373	μPC324C	
IC6	μPC324C	(Zeromatic Cont)	(Bipolar)	MX-4373	μPC324C	
IC7	TDA1905	(Audio Amp)	(Bipolar)	MX-6439	TDA1905	
IC8	HA17805P/	(Voltage Regulator)	(Bipolar)	MX-4760	HA17805P/	
	TA78005AP				TA78005AP	
IC9	S-81250HG	(Voltage Regulator)	(C-MOS)	MX-7475	S-81250HG	
IC301	MC145158	(PLL)	(C-MOS)	MX-4014	MC145158	
IC302	CX7925B	(PLL/Pre-Scaler)	(N-MOS)	MX-6967	CX7925B	
IC303	TD6127AP	(Pre-Scaler)	(Bipolar)	MX-7476	TD6127AP	
IC304	TD6105AP	(Pre-Scaler)	(Bipolar)	MX-7477	TD6105AP	
IC305	TA78L005AP	(Voltage Regulator)	(Bipolar)	MX-6487	TA78L005AP	
IC306	TA78L005AP	(Voltage Regulator)	(Bipolar)	MX-6487	TA78L005AP	
IC501	SN74LS145/	(Decoder)	(Bipolar)	MX-7479	SN74LS145/	
	HD74LS145				HD74LS145	
IC502	TD62504P	(Driver)	(Bipolar)	MX-5593	TD62504P	
IC503	GRE0327	(CPU)	(C-MOS)	MX-7478	GRE0327	
IC504	μPD446G-45/	(Memory Back Up)	(C-MOS)	MX-7480	μPD446G-45/	
	TC5517CF-20				TC5527CF-20	
IC701	μPD7225G-00	(LCD Controller)	(C-MOS)	MX-7481	μPD7225G-00	

COILS & TRANSFORMERS						
Ref. No.		Description	RS Part Number	MFR's Part Number		
L1	Coil, Trap	(609.5MHz)	CA-1216	GR-H761		
L2	Not used					
L3	Coil, B.P.F	(280MHz to 520MHz)	CA-1219	2LNB-253		
L4	Coil, B.P.F	(280MHz to 520MHz)	CA-1219	· 2LNB-253		
L5	Coil, B.P.F	(280MHz to 520MHz)	CA-1219	2LNB-253		
L6	Coil, B.P.F	(280MHz to 520MHz)	CA-1219	2LNB-253		
L7	Coil, B.P.F	(280MHz to 520MHz)	CA-1219 .	2LNB-253		
L8	Coil, B.P.F	(280MHz to 520MHz)	CA-1219	2LNB-253		
L9	Coil, B.P.F	(280MHz to 520MHz)	CA-1219	2LNB-253		
L10	Coil, B.P.F	(280MHz to 520MHz)	CA-1219	2LNB-253		
L11	Not used					
L12	Coil, B.P.F	(174MHz to 279.995MHz)	CA-1220	2LNB-252		
L13	Coil, B.P.F	(174MHz to 279.995MHz)	CA-1220	2LNB-252		
L14	Coil, B.P.F	(174MHz to 279.995MHz)	CA-1220	2LNB-252		
L15	Coil, B.P.F	(174MHz to 279.995MHz)	CA-1220	2LNB-252		
L16	Coil, B.P.F	(174MHz to 279.995MHz)	CA-1220	2LNB-252		
L17	Coil, B.P.F	(174MHz to 279.995MHz)	CA-1220	2LNB-252		
L18	Coil, B.P.F	(174MHz to 279.995MHz)	CA-1220	2LNB-252		
L19	Coil, B.P.F	(174MHz to 279.995MHz)	CA-1220	2LNB-252		
L20	Not used					
L21	Coil, B.P.F	(108MHz to 173.995MHz)	CA-1221	3LNB-251		
L22	Coil, B.P.F	(108MHz to 173.995MHz)	CA-1221	3LNB-251		

Ref. No.		Description	RS Part Number	MFR's Part Number
L23	Coil, B.P.F	(108MHz to 173.995MHz)	CA-1221	3LNB-251
L24	Coil, B.P.F	(108MHz to 173.995MHz)	CA-1221	3LNB-251
L25	Coil, B.P.F	(108MHz to 173.995MHz)	CA-1221	3LNB-251
	·	(108MHz to 173.995MHz)	CA-1221	3LNB-251
L26	Coil, B.P.F	·		3LNB-251
L27	Coil, B.P.F	(108MHz to 173.995MHz)	CA-1221	1
L28	Coil, B.P.F	(108MHz to 173.995MHz)	CA-1221	3LNB-251
L29	Not used			
L30	Coil, B.P.F	(68MHz to 107.995MHz)	CA-1222	4LNB-250
L31	Coil, B.P.F	(68MHz to 107.995MHz)	CA-1222	4LNB-250
L32	Coil, B.P.F	(68MHz to 107.995MHz)	CA-1222	4LNB-250
L33	Coil, B.P.F	(68MHz to 107.995MHz)	CA-1222	4LNB-250
		(68MHz to 107.995MHz)	CA-1222	4LNB-250
L34	Coil, B.P.F	•	CA-1222	4LNB-250
L35	Coil, B.P.F	(68MHz to 107.995MHz)	1	
L36	Coil, B.P.F	(68MHz to 107.995MHz)	CA-1222	4LNB-250
L37	Coil, B.P.F	(68MHz to 107.995MHz)	CA-1222	4LNB-250
L38	Not used			
L39	Coil, B.P.F	(40MHz to 67.995MHz)	CA-1223	4LNB-249
L40	Coil, B.P.F	(40MHz to 67.995MHz)	CA-1223	4LNB-249
		•	CA-1223	4LNB-249
L41	Coil, B.P.F	(40MHz to 67.995MHz)		
L42	Coil, B.P.F	(40MHz to 67.995MHz)	CA-1223	4LNB-249
L43	Coil, B.P.F	(40MHz to 67.995MHz)	CA-1223	4LNB-249
L44	Coil, B.P.F	(40MHz to 67.995MHz)	CA-1223	4LNB-249
L45	Coil, B.P.F	(40MHz to 67.995MHz)	CA-1223	4LNB-249
L46	Coil, Choke	10μΗ	CA-9828	LAL03NA100K
L47	Not used	104.1	37.5523	
		(25MH= += 20 005MH=)	CA-8513	LALO3NAR33M
L48	Coil, B.P.F	(25MHz to 39.995MHz)		LALO3NAR33M
L49	Coil, B.P.F	(25MHz to 39.995MHz)	CA-8513	
L50	Coil, B.P.F	(25MHz to 39.995MHz)	CA-8513	LAL03NAR33M
L51	Coil, B.P.F	(25MHz to 39.995MHz)	CA-8513	LALO3NAR33M
L52	Coil, B.P.F	(25MHz to 39.995MHz)	CA-8513	LALO3NAR33M
L53	Coil, B.P.F	(25MHz to 39.995MHz)	CA-8513	LAL03NAR33M
L54	Not used	,,		
L55	Coil, Trap	(609.5MHz)	CA-1216	GR-H761
		(003.31/11/2)		2LNM-258
L56	Coil, D.B.M		CA-1224	2LNM-258
L57	Coil, D.B.M		CA-1224	1
L58	Coil, Choke		SB-2119	2LN0-256
L59	Coil, 1st 1F		CA-1217	GR-H763
L60	Coil, Trap	(397.5MHz)	CA-1218	GR-H762
L61	Coil, Choke	0.68µH	CB-2116	LALO3NAR68M
L62	Coil, Choke	2.2mH	CB-2118	FL5HS222J-09
			CB-2117	LAL03NA1R0M
L63	Coil, Choke	1μH		LALO3NA101K
L64	Coil, Choke	100μΗ	CB-2070	1
L65	Coil, Choke		CA-3182	3B037
L66	Stripline on P.C	C.B		
L67	Stripline on P.C	C.B		
L68	Stripline on P.C			
L69	Stripline on P.O			
	1			
L70	Stripline on P.C		CB-2117	LAL03NA1R0M
L71	Coil, Choke	1μΗ	CB-2117	LALUSNATROW
			0.0000	1 41 0241 4 1001
L301	Coil, Choke	10µH	CA-9828	LALO3NA100K
L302	Coil, Choke	10μH	CA-9828	LAL03NA100K
L303	Coil, Choke	10μΗ	CA-9828	LALO3NA100K
L304	Low-pass Filter	· · · · · · · · · · · · · · · · · · ·	CA-1215	2.5LBN-257
			CA-1215	2.5LNB-257
L305	Low-pass Filter		CA-9828	LALO3NA100K
	Coil, Choke	10μH		1
L306 L307	Coil, Choke	10μH	CA-9828	LAL03NA100K

Ref. No.	Description	RS Part Number	MFR's Part Number
L308	Coil, Choke 0.33µH	CB-2120	FL3HR33K
L309	Coil, Choke	CB-2122	2LNO-254
L310	Coil, Choke 0.33µH	CB-2120	FL3HR33K
L311	Coil, Choke	CB-2123	2LNO-255
L312	Coil, Choke	CB-2124	2LNO-253
L313	Coil, Choke 100µH	CB-2070	LAL03NA101K
L314	Coil, Choke 100µH	CB-2070	LAL03NA101K
L315	Coil, Choke 100µH	CB-2070	LAL03NA101K
L316	Coil, Choke 100µH	CB-2070	LAL03NA101K
L317	Coil, Choke	CB-2124	2LNO-253
L318	Coil, Choke 10μΗ	CB-2071	FL3H100K
L319	Coil, Choke 100µH	CB-2070	LAL03NA101K
L320	Coil, Choke 100µH	CB-2070	LAL04NA101K
L321	Coil, Choke 1µH	CB-2117	LAL03NA1R0M
L322	Coil, Choke 1µH	CB-2117	LALO3NA1ROM
L323	Low-pass Filter, Stripline on P.C.B		
L324	Low-pass Filter, Stripline on P.C.B		
L325	Low-pass Filter, Stripline on P.C.B		
L326	Low-pass Filter, Stripline on P.C.B		
L327	High-pass Filter, Stripline on P.C.B		
L328	High-pass Filter, Stripline on P.C.B		
L329	High-pass Filter, Stripline on P.C.B		
L330	High-pass Filter, Stripline on P.C.B		
L501	Coil, Choke 100µH		LAL03KH101K
L502	Coil, Choke 100µH		LAL03KH101K
L503	Coil, Choke 100μΗ		LAL03KH101K
T1	Coil, 2nd IF	CA-1211	GR-N769
T2	Coil, 2nd IF (WFM Band)	CA-1212	GR-N764
T3	Coil, 2nd IF	CA-1212	GR-N764
T4	Coil, 3rd IF	CA-7246	GR-A470033
T5	Coil, 3rd IF	CA-7246	GR-A470033
Т6	Coil, Quadrature DET. (WFM Band), 10.7MHz	CA-1213	GR-A793
T7	Coil, 3rd IF (AM Band)	CA-9882	GR-D681
Т8	Coil, 3rd IF (AM Band)	CA-9883	GR-D682
Т9	Coil, 2nd IF (AM, NFM Band)		GR-N797
T10	Coil, Filter		GR-N797
T11	Coil, 2nd IF (AM, NFM Band)		GR-N797
T12	Coil, 2nd IF (AM, NFM Band)	CA-1212	GR-N764
T13	Coil, Quadrature DET. (NFM Band)	CA-1214 -	GR-P792
T14	DC-DC Converter, Transformer	CA-1215	GE-84D-5242
T701	DC-AC Converter, Transformer	TB-0126 .	N19-5N75TK
<b>∆</b> T801 <sup>†</sup>	Transformer, Power	TA-0127	GE-85D-5667

† See Appendix (page 54) for ITI models.

TRANSISTORS							
Ref. No.		Description	RS Part Number	MFR's Part Number			
Q1 ·		2SC2458(GR) (NPN) AGC. Cont.	2SC2458GR	2SC2458(GR)			
Q2		2SC3356 (NPN)	2SC-3356	2SC3356			
Q3		2SC3356 (NPN)	2SC-3356	2SC3356			
Q4		2SC3356 (NPN)	2SC-3356	2SC3356 .			
Q5		2SC3355 (NPN)	2SC-3355	2SC3355			
Q6		2SC3355 (NPN)	2SC-3355	2SC3355			
Q7	Not used						
Q8		2SC2458(GR) (NPN)	2SC2458GR	2SC2458(GR)			

Ref. No.	Description	RS Part Number	MFR's Part Number
Q9 Q10 Q11 Q12 Q13 Q14 Q15 Q16 Q17 Q18 Q19 Q20 Q21 Q22 Q23 Q24 Q25 Q26 Q27 Q28 Q29 Q30 Q31 Q32 Q33 Q34	2SC2458(GR) (N 2SC2668(Y) (N 2SC2668(Y) (N 2SC2668(Y) (N 2SC2458(Y) (N 2SC2458(GR) (N 2SC2458(Y) (N 2SC2458(Y) (N 2SC2668(Y) (N 2SC2668(Y) (N 2SC2668(Y) (N 2SC2668(Y) (N 2SC2458(GR) (N	PN) 2SC-2458GR S (NPN) 2SC-3327 PN) 2SC-2458GR	2SC2458(GR) 2SC2458(GR) 2SC2668(Y) 2SC2668(Y) 2SK192A(GR) 2SC2458(Y) 2SC2458(GR) 2SC2458(Y) 2SC2458(Y) 2SC2668(Y) 2SC2668(Y) 2SC2668(Y) 2SC2458(GR) 2SC2458(GR) 2SC2458(GR) 2SC2458(GR) 2SC2458(GR) 2SC2458(GR) RN2005 RN2005 RN2005 RN2005 2SC2458(GR)
Q301 Q302 Q303 Q304 Q305 Q306 Q307 Q308 Q309 Q310 Q311 Q312 Q313 Q314 Q315 Q316 Q317 Q318 Q319	RN2005 (PNP) w RN2005 (PNP) w 2SC3358 (NPN) 2SC3358 (NPN)	1/Resistor	RN2005 RN2005 2SC3358
Q501 Q502 Q503 Q504 Q505 Q506 Q507	RN2201 (PNP) w/ RN2201 (PNP) w/ RN2201 (PNP) w/ RN2201 (PNP) w/ RN2201 (PNP) w/ RN2201 (PNP) w/ RN2201 (PNP) w/	Resistor Resistor Resistor Resistor Resistor Resistor	RN2201 RN2201 RN2201 RN2201 RN2201 RN2201 RN2201
Q701	2SC945(QA) (NPN		2SC945(QA)

	RESISTORS							
Ref. No.		Descript	tion		RS Part Number	MFR's Part Number		
R1	Not used							
R2	Chip	100 ohm	1/8W	±5%	ND-0132EBN	ERJ-8GCYJ101		
R3	Chip	82 ohm	1/8W	±5%	ND-0122EBN	ERJ-8GCYJ820		
R4	Chip	100 ohm	1/8W	±5%	ND-0132EBN	ERJ-8GCYJ101		
R5	Chip	100k ohm	1/8W	±5%	ND-0371EBN	ERJ-8GCYJ104		
R6	Chip	10k ohm	1/8W	±5%	ND-0281EBN	ERJ-8GCYJ103		
R7	Chip	3.3k ohm	1/8W	±5%	ND-0230EBN	ERJ-8GCYJ332		
R8	Chip	470k ohm	1/8W	±5%	ND-0169EBN	ERJ-8GCYJ474		
R9	Chip	470k ohm	1/8W	±5%	ND-0169EBN	ERJ-8GCYJ474		
R10	Chip	1k ohm	1/8W	±5%	ND-0196EBN	ERJ-8GCYJ102		
R11	Chip	47k ohm	1/8W	±5%	ND-0340EBN	ERJ-8GCYJ473		
R12	Chip	4.7k ohm	1/8W	±5%	ND-0247EBN	ERJ-8GCYJ472		
R13	Chip	1k ohm	1/8W	±5%	ND-0196EBN	ERJ-8GCYJ102		
R14	Chip	470k ohm	1/8W	±5%	ND-0169EBN	ERJ-8GCYJ474		
R15	Chip	470k ohm	1/8W	±5%	ND-0169EBN	ERJ-8GCYJ474		
R16	Chip	100k ohm	1/8W	±5%	ND-0371EBN	ERJ-8GCYJ104		
R17	Chip	3.3k ohm	1/8W	±5%	ND-0230EBN	ERJ-8GCYJ332		
R18	Chip	470k ohm	1/8W	±5%	ND-0250EBN	ERJ-8GCYJ474		
R19	Chip	470k ohm	1/8W	±5%	ND-0169EBN	ERJ-8GCYJ474		
R20		470k ohm	1/8W	±5%		ERJ-8GCYJ474		
	Chip	1k ohm	1/8W	±5%	ND-0169EBN	ERJ-8GCYJ102		
R21	Chip			±5%	ND-0196EBN	ERJ-8GCYJ472		
R22	Chip	4.7k ohm	1/8W		ND-0247EBN			
R23	Chip	1k ohm	1/8W	±5%	ND-0196EBN	ERJ-8GCYJ102		
R24	Chip	470k ohm	1/8W	±5%	ND-0169EBN	ERJ-8GCYJ474		
R25	Chip	470k ohm	1/8W	±5%	ND-0169EBN	ERJ-8GCYJ474		
R26	Chip	470k ohm	1/8W	±5%	ND-0169EBN	ERJ-8GCYJ474		
R27	Chip	470k ohm	1/8W	±5%	ND-0169EBN	ERJ-8GCYJ474		
R28	Chip	470k ohm	1/8W	±5%	ND-0169EBN	ERJ-8GCYJ474		
R29	Chip	470k ohm	1/8W	±5%	ND-0169EBN	ERJ-8GCYJ474		
R30	Chip	470k ohm	1/8W	±5%	ND-0169EBN	ERJ-8GCYJ474		
R31	Chip	1k ohm	1/8W	±5%	ND-0196EBN	ERJ-8GCYJ102		
R32	Chip	4.7k ohm	1/8W	±5%	ND-0247EBN	ERJ-8GCYJ472		
R33	Chip	1k ohm	1/8W	±5%	ND-0196EBN	ERJ-8GCYJ102		
R34	Chip	470k ohm	1/8W	±5%	ND-0169EBN	ERJ-8GCYJ474		
R35	Chip	470k ohm	1/8W	±5%	ND-0169EBN	ERJ-8GCYJ474		
R36	Chip	470k ohm	1/8W	±5%	ND-0169EBN	ERJ-8GCYJ474		
R37	Chip	470k ohm	1/8W	±5%	ND-0169EBN	ERJ-8GCYJ474		
R38	Chip	1k ohm	1/8W	±5%	ND-0196EBN	ERJ-8GCYJ102		
R39	Chip	4.7k ohm	1/8W	±5%	ND-0247EBN	ERJ-8GCYJ472		
R40	Chip	1k ohm	1/8W	±5%	ND-0196EBN -	ERJ-8GCYJ102		
R41	Chip	470k ohm	1/8W	±5%	ND-0169EBN	ERJ-8GCYJ474		
R42	Chip	470k ohm	1/8W	±5%	ND-0169EBN	ERJ-8GCYJ474		
R43	Chip	1k ohm	1/8W	±5%	ND-0196EBN	ERJ-8GCYJ102		
R44	Chip	4.7k ohm	1/8W	±5%	ND-0247EBN	ERJ-8GCYJ472		
R45	Chip	1k ohm	1/8W	±5%	ND-0196EBN	ERJ-8GCYJ102		
R46	Chip	1k ohm	1/8W	±5%	ND-0196EBN	ERJ-8GCYJ102		
R47	Chip	4.7k ohm	1/8W	±5%	ND-0247EBN	ERJ-8GCYJ472		
R48	Chip	1k ohm	1/8W	±5%	ND-0196EBN	ERJ-8GCYJ102		
R49	Chip	1k ohm	1/8W	±5%	ND-0196EBN	ERJ-8GCYJ102		
R50	Chip	4.7k ohm	1/8W	±5%	ND-0196EBN ND-0247EBN	ERJ-8GCYJ472		
R51	Chip	1k ohm	1/8W	±5%		ERJ-8GCYJ102		
R52	Chip	1k ohm	1/8W	±5%	ND-0196EBN	ERJ-8GCYJ102		
R53	Chip	270 ohm	1/8W	±5%	ND-0196EBN	ERJ-8GCYJ271		
R54	Chip	2.2k ohm	1/8W	±5%	ND-0155EBN	ERJ-8GCYJ222		
R55		470 ohm		±5%	ND-0216EBN	ERJ-8GCYJ471		
1100	Chip	470 onm	1/8W	±370	ND-0169EBN	ENJ-03C 134/1		

Ref. No.		Description			RS Part Number	MFR's Part Number
R56	Chip	22 ohm	1/8W	±5%	ND-0078EBN	ERJ-8GCYJ220
R57	Chip	820 ohm	1/8W	±5%	ND-0187EBN	ERJ-8GCYJ821
R58	Chip	1k ohm	1/8W	±5%	ND-0196EBN	ERJ-8GCYJ102
R59	Chip	680 ohm	1/8W	±5%	ND-0183EBN	ERJ-8GCYJ681
R60	Chip	330 ohm	1/8W	±5%	ND-0159EBN	ERJ-8GCYJ331
R61	Chip	56 ohm	1/8W	±5%	ND-0107EBN	ERJ-8GCYJ560
R62	Chip	680 ohm	1/8W	±5%	ND-0183EBN	ERJ-8GCYJ681
R63	Chip	1k ohm	1/8W	±5%	ND-0196EBN	ERJ-8GCYJ102
R64	Chip	470 ohm	1/8W	±5%	ND-0169EBN	ERJ-8GCYJ471
R65	Chip	100 ohm	1/8W	±5%	ND-0132EBN	ERJ-8GCYJ101
R66	Chip	47 ohm	1/8W	±5%	ND-0099EBN	ERJ-8GCYJ470
R67	Chip	56 ohm	1/8W	±5%	ND-0107EBN	ERJ-8GCYJ560
R68	Chip	1.5k ohm	1/8W	±5%	ND-0206EBN	ERJ-8GCYJ152
R69	Chip	2.2k ohm	1/8W	±5%	ND-0216EBN	ERJ-8GCYJ222
R70	Chip	330 ohm	1/8W	±5%	ND-0159EBN	ERJ-8GCYJ331
R71	Chip	100 ohm	1/8W	±5%	ND-0132EBN	ERJ-8GCYJ101
R72			1/8W	±5%	ND-0107EBN	ERJ-8GCYJ560
	Chip	56 ohm			ND-0340EBN	
R73	Chip	47k ohm	1/8W	±5%		ERJ-8GCYJ473 ERJ-8GCYJ224
R74	Chip	220k ohm	1/8W	±5%	ND-0396EBN	
R75	Chip	56 ohm	1/8W	±5%	ND-0107EBN	ERJ-8GCYJ560
R76	Chip	330 ohm	1/8W	±5%	ND-0159EBN	ERJ-8GCYJ331 ERJ-8GCYJ470
R77	Chip	47 ohm	1/8W	±5%	ND-0099EBN	
R78	Chip	220 ohm	1/8W	±5%	ND-0149EBN	ERJ-8GCYJ221
R79	Carbon film	1k ohm	1/6W	±5%	N-0196ECC	RD16U102J
R80	Chip	56 ohm	1/8W	<b>±</b> 5%	ND-0107EBN	ERJ-8GCYJ560
R81	Carbon film	100k ohm	1/6W	±5%	N-0371ECC	RD16U104J
R82 ·	Carbon film	47k ohm	1/6W	±5%	N-0340ECC	RD16U473J
R83	Carbon film	120k ohm	1/6W	±5%	N-0375ECC	RD16U124J
R84	Carbon film	15k ohm	1/6W	±5%	N-0297ECC	RD16U153J
R85	Carbon film	47k ohm	1/6W	±5%	N-0340ECC	RD16U473J
R86	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J
R87	Carbon film	27k ohm	1/6W	±5%	N-0316ECC	RD16U273J
R88	Carbon film	56k ohm	1/6W	±5%	N-0345ECC	RD16U563J
R89	Carbon film	5.6k ohm	1/6W	±5%	N-0257ECC	RD16U562J
R90	Carbon film	2.2k ohm	1/6W	±5%	N-0216ECC	RD16U222J
R91	Carbon film	47k ohm	1/6W	±5%	N-0340ECC	RD16U473J
R92	Carbon film	47k ohm	1/6W	±5%	N-0340ECC	RD16U473J
R93	Carbon film	220k ohm	1/6W	±5%	N-0396ECC	RD16U224J .
R94	Carbon film	1k ohm	1/6W	±5% -	N-0196ECC	RD16U102J
R95	Carbon film	1k ohm	1/6W	±5%	N-0196ECC	RD16U102J
R96	Carbon film	100k ohm	1/6W	±5%	N-0371ECC	RD16U104J
R97	Carbon film	220 ohm	1/6W	±5%	N-0149ECC -	RD16U221J
R98	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J
R99	Carbon film	1k ohm	1/6W	±5%	N-0196ECC	RD16U102J
R100	Carbon film	1k ohm	1/6W	±5%	N-0196ECC	RD16U102J
R101	Carbon film	6.8k ohm	1/6W	±5%	N-0262ECC	RD16U682J
R102	Carbon film	2.2k ohm	1/6W	±5%	N-0216ECC	RD16U222J
R103	Carbon film	1k ohm	1/6W	±5%	N-0196ECC	RD16U102J
R104	Carbon film	220k ohm	1/6W	±5%	N-0396ECC	RD16U224J
R105	Carbon film	220 ohm	1/6W	±5%	N-0149ECC	RD16S221J
R106	Carbon film	10 ohm	1/6W	±5%	N-0063ECC	RD16U100J
R107	Carbon film	330 ohm	1/6W	±5%	N-0159ECC	RD16U331J
R108	Carbon film	120 ohm	1/6W	±5%	N-0136ECC	RD16U121J
R109	Carbon film	33k ohm	1/6W	±5%	N-0324ECC	RD16U333J
R110	Carbon film	33k ohm	1/6W	±5%	N-0324ECC	RD16U333J
R111	Not used					
R112	Carbon film	1M ohm	1/6W	±5%	N-0445ECC	RD16U105J

Ref. No.		Descriptoin		,	RS Part Number	MFR's Part Number
R113	Carbon film	1k ohm	1/6W	±5%	N-0196ECC	RD16U102J
R114	Carbon film	22k ohm	1/6W	±5%	N-0311ECC	RD16U223J
R115	Carbon film	470 ohm	1/6W	±5%	N-0169ECC	RD16U471J
R116	Carbon film	270k ohm	1/6W	±5%	N-0402ECC	RD16U274J
R117	Carbon film	15k ohm	1/6W	±5%	N-0297ECC	RD16S153J
R118	Carbon film	470 ohm	1/6W	±5%	N-0169ECC	RD16U471J
	Carbon film	100 ohm	1/6W	±5%	N-0132ECC	RD16U101J
R119			1/6W	±5%	N-0387ECC	RD16U184J
R120	Carbon film	180k ohm		±5%	N-0324ECC	RD16U333J
R121	Carbon film	33k ohm	1/6W		1 1	RD16U101J
R122	Carbon film	100 ohm	1/6W	±5%	N-0132ECC	
R123	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J
R124	Carbon film	4.7k ohm	1/6W	±5%	N-0247ECC	RD16U472J ·
R125	Carbon film	220k ohm	1/6W	±5%	N-0396ECC	RD16U224J
R126	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J
R127	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J
R128	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J
R129	Carbon film	2.2k ohm	1/6W	±5%	N-0216ECC	RD16U222J
R130	Carbon film	390k ohm	1/6W	±5%	N-0414ECC	RD16S394J
R131	Carbon film	3.3k ohm	1/6W	±5%	N-0230ECC	RD16S332J
R132	Carbon film	470 ohm	1/6W	±5%	N-0169ECC	RD16U471J
R133	Carbon film	1k ohm	1/6W	±5%	N-0196ECC	RD16U102J
R134	Carbon film	1k ohm	1/6W	±5%	N-0196ECC	RD16U102J
R135	Carbon film	390k ohm	1/6W	±5%	N-0414ECC	RD16S394J
R136	Carbon film	5.6k ohm	1/6W	±5%	N-0257ECC	RD16S562J
		100 ohm	1/6W	±5%	N-0132ECC	RD16U101J
R137	Carbon film			±5%	N-0132ECC	RD16U101J
R138	Carbon film	100 ohm	1/6W		N-0132ECC	RD16S101J
R139	Carbon film	100 ohm	1/6W	±5%		RD16S333J
R140	Carbon film	33k ohm	1/6W	±5%	N-0324ECC	
R141	Carbon film	1.5k ohm	1/6W	±5%	N-0206ECC	RD16U152J
R142	Carbon film	3.3k ohm	1/6W	±5%	N-0230ECC	RD16U332J
R143	Carbon film	1.5k ohm	1/6W	±5%	N-0206ECC	RD16U152J
R144	Carbon film	100k ohm	1/6W	±5%	N-0371ECC	RD16U104J
R145	Carbon film	33k ohm	1/6W	±5%	N-0324ECC	RD16U333J
R146	Carbon film	47k ohm	1/6W	±5%	N-0340ECC	RD16U473J
R147	Carbon film	33k ohm	1/6W	±5%	N-0324ECC	RD16U333J
R148	Carbon film	47k ohm	1/6W	±5%	N-0340ECC	RD16U473J
R149	Carbon film	2.2k ohm	1/6W	±5%	N-0216ECC	RD16U222J
R150	Carbon film	100k ohm	1/6W	±5%	N-0371ECC	RD16U104J
R151	Carbon film	4.7k ohm	1/6W	±5%	N-0247ECC	RD16U472J
R152	Carbon film	1M ohm	1/6W	±5%	N-0445ECC	RD16U105J
R153	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J
R154	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J
R155	Carbon film	4.7k ohm	1/6W	±5%	N-0247ECC	RD16U472J
R156	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J
R157	Carbon film	8.2k ohm	1/6W	±5%	N-0271ECC	RD16U822J
	Carbon film	1.5k ohm	1/6W	±5%	N-0206ECC	RD16U152J
R158			1/6W	±5%	N-0206ECC N-0224ECC	RD16U272J
R159	Carbon film	2.7k ohm				RD16U102J
R160	Carbon film	1k ohm	1/6W	±5%	N-0196ECC	RD16U1023
R161	Carbon film	4.7k ohm	1/6W	±5%	N-0247ECC	
R162	Carbon film	3.3k ohm	1/6W	±5%	N-0230ECC	RD16U332J
R163	Carbon film	4.7k ohm	1/6W	±5%	N-0247ECC	RD16U472J
R164	Carbon film	2.7k ohm	1/6W	±5%	N-0224ECC	RD16U272J
R165	Carbon film	33k ohm	1/6W	±5%	N-0324ECC	RD16U333J .
R166	Carbon film	47k ohm	1/6W	±5%	N-0340ECC	RD16U473J
R167	Carbon film	100k ohm	1/6W	±5%	N-0371ECC	RD16U104J
R168	Carbon film	5.6k ohm	1/6W	±5%	N-0257ECC	RD16U562J
R169	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J

Ref. No.		Description	n		RS Part Number	MFR's Part Number
R170	Carbon film	100k ohm	1/6W	±5%	N-0371ECC	RD16U104J
R171	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J
R172	Carbon film	33k ohm-∕	1/6W	±5%	N-0324ECC	RD16U333J
R173	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J
	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J
R174						RD16U333J
R175	Carbon film	33k ohm	1/6W	±5%	N-0324ECC	
R176	Carbon film	33k ohm	1/6W	±5%	N-0324ECC	RD16U333J
R177	Carbon film	4.7k ohm	1/6W	±5%	N-0247ECC	RD16U472J
R178	Carbon film	1M ohm	1/6W	±5%	N-0445ECC	RD16U105J
R179	Carbon film	1.5k ohm	1/6W	±5%	N-0206ECC	RD16U152J
R180	Carbon film	4.7k ohm	1/6W	±5%	N-0247ECC	RD16U472J
R181	Carbon film	100k ohm	1/6W	±5%	N-0371ECC	RD16U104J
R182	Carbon film	4.7k ohm	1/6W	±5%	N-0247ECC	RD16U472J
R183	Carbon film	220k ohm	1/6W	±5%	N-0396ECC	RD16U224J
	Carbon film	47k ohm	1/6W	±5%		RD16U473J
R184				±5%	N-0340ECC	RD16U473J
R185	Carbon film	47k ohm	1/6W		N-0340ECC	
R186	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J
R187	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J
R188	Carbon film	100k ohm	1/6W	±5%	N-0371ECC	RD16U104J
R189	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J
R190	Carbon film	15k ohm	1/6W	±5%	N-0297ECC	RD16U153J
R191	Carbon film	68k ohm	1/6W	±5%	N-0354ECC	RD16U683J
R192	Carbon film	100k ohm	1/6W	±5%	N-0371ECC	RD16U104J
R193	Carbon film	100k ohm	1/6W	±5%	N-0371ECC	RD16U104J
R194	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J
						RD16U223J
R195	Carbon film	22k ohm	1/6W	±5%	N-0311ECC	,
R196	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J
R197	Carbon film	100k ohm	1/6W	±5%	N-0371ECC	RD16U104J
R198	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J
R199	Carbon film	82k ohm	1/6W	±5%	N-0360ECC	RD16U823J
R200	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J
R201	Carbon film	47k ohm	1/6W	±5%	N-0340ECC	RD16U473J
R202	Carbon film	22k ohm	1/6W	±5%	N-0311ECC	RD16U223J
R203	Carbon film	22k ohm	1/6W	±5%	N-0311ECC	RD16U223J
	1				N-0340ECC	RD16U473J
R204	Carbon film	47k ohm	1/6W	±5%		
R205	Carbon film	22k ohm	1/6W	±5%	N-0311ECC	RD16U223J
R206	Carbon film	47k ohm	1/6W	±5%	N-0340ECC	RD16U473J
R207	Carbon film	1M ohm	1/6W	±5%	N-0445ECC	RD16U105J
R208	Carbon film	2.7k ohm	1/6W	±5%	N-0224ECC	RD16U272J
R209	Carbon film	470 ohm	1/6W	±5%	N-0169ECC	RD16U471J
R210	Carbon film	22k ohm	1/6W	±5%	N-0311ECC	RD16U223J
R211	Carbon film	100k ohm	1/6W	±5%	N-0371ECC	RD16U104J
R212	Carbon film	1M ohm	1/6W	±5%	N-0445ECC	RD16U105J
R213	Carbon film	1k ohm	1/6W	±5%	N-0196ECC	RD16U102J
R214†	Metal film	3.3 ohm	1W	±5%	N-0130ECC	RNS1.0-3R3J
						RD16S103J
R215	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	
R216	Carbon film	47 ohm	1/6W	±5%	N-0099ECC	RD16S470J
R217	Carbon film	1 ohm	1/6W	±5%	N-0022ECC	RD16U010J
R218	Carbon film	270 ohm	1/6W	±5%	N-0155ECC	RD16U271J
R219	Carbon film	56k ohm	1/6W	±5%	N-0345ECC	RD16U563J
R220	Carbon film	33k ohm	1/6W	±5%	N-0324ECC	RD16U333J
R221	Carbon film	470k ohm	1/6W	±5%	N-0423ECC	RD16U474J
R222	Carbon film	180k ohm	1/6W	±5%	N-0387ECC	RD16U184J
R223	Carbon film	2.2M ohm	1/6W	±5%	N-0454ECC	RD16U225J
	1			±5%	N-0454ECC	RD16U225J
R224	Carbon film	2.2M ohm	1/6W			
R225	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J
R226	Carbon film	330 ohm	1/6W	±5%	N-0159ECC	RD16U331J

<sup>†</sup> See Appendix (page 54) for ITI models.

Ref. No.		Description			RS Part Number	MFR's Part Number
R227	Carbon film	220 ohm	1/6W	±5%	N-0149ECC	RD16U221J
R228	Carbon film	100k ohm	1/6W	±5%	N-0371ECC	RD16U104J
R229	Carbon film	15k ohm	1/6W	±5%	N-0297ECC	RD16U153J
R230	Carbon film	33k ohm	1/6W	±5%	N-0324ECC	RD16S333J
R231	Carbon film	220k ohm	1/6W	±5%	N-0396ECC	RD16U224J
	Carbon film	15k ohm	1/6W	±5%	N-0297ECC	RD16U153J
R232				±5%	N-0324ECC	RD16U333J
R233	Carbon film	33k ohm	1/6W		N-0324ECC N-0257ECC	RD16U562J
R234	Carbon film	5.6k ohm	1/6W	±5%	N-0237ECC N-0022EGE	RNS1.0-010J
R235 <sup>†</sup>	Metal film	1 ohm	1W	±5%		
R236	Chip	3.3k ohm	1/8W	±5%	ND-0230EBN	ERJ-8GCYJ332
R237	Carbon film	100 ohm	1/6W	±5%	N-0132ECC	RD16U101J
R238	Carbon film	4.7k ohm	1/6W	±5%	N-0247ECC	RD16U472J
R239	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J
R240	Carbon film	4.7k ohm	1/6W	±5%	N-0247ECC	RD16U472J
R241	Chip	4.7k ohm	1/8W	±5%	ND-0247EBN	ERJ-8GCYJ472
R242	Chip	10k ohm	1/8W	±5%	ND-0281EBN	ERJ-8GCYJ103
R243	Chip	4.7k ohm	1/8W	±5%	ND-0247EBN	ERJ-8GCYJ472
R244	Carbon film	220k ohm	1/6W	±5%	N-0396ECC	RD16U224J
R245	Carbon film	180k ohm	1/6W	±5%	N-0387ECC	RD16U184J
R246	Carbon film	4.7k ohm	1/6W	±5%	N-0247 ECC	RD16U472J
R247	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J
		220 ohm	1/4W	±5%	14-0201200	ERD-25PJ221
R248	Carbon film			±5%		ERD-25PJ221
R249	Carbon film	220 ohm	1/4W			
R250	Carbon film	220 ohm	1/4W	±5%	•	ERD-25PJ221
R251	Carbon film	220 ohm	1/4W	±5%		ERD-25PJ221
R252	Carbon film	220 ohm	1/4W	±5%		ERD-25PJ221
R253	Carbon film	220 ohm	1/4W	±5%		ERD-25PJ221
R254	Carbon film	220 ohm	1/4W	±5%		ERD-25PJ221
R255	Chip	100 ohm	1/8W	±5%	ND-0132EBN	ERJ-8GCYJ101
R256	Carbon film	1 ohm	1/2W	±5%	N-0022EFE	RNF1/2S1R0J
R301	Carbon film	2.2k ohm	1/6W	±5%	N-0216ECC	RD16U222J
R302	Carbon film	100 ohm	1/6W	±5%	N-0132ECC	RD16U101J
R303	Carbon film	220 ohm	1/6W	±5%	N-0149ECC	RD16U221J
R304	Carbon film	47k ohm	1/6W	±5%	N-0340ECC	RD16U473J
R305	Carbon film	2.2k ohm	1/6W	±5%	N-0216ECC	RD16U222J
R306	Carbon film	1k ohm	1/6W	±5%	N-0196ECC	RD16U102J
R307	Carbon film	100 ohm	1/6W	±5%	N-0132ECC	RD16U101J
R308	Carbon film	220 ohm	1/6W	±5%	N-0149ECC	RD16U221J
R309	Carbon film	100k ohm	1/6W	±5%	N-0371ECC	RD16U104J
R310	Carbon film	10 ohm	1/6W	±5%	N-0063ECC	RD16U100J
R311	Carbon film	100 ohm	1/6W	±5%	N-0132ECC .	RD16U101J
R312	Carbon film	33k ohm	1/6W	±5%	N-0324ECC	RD16U333J
	Carbon film	100 ohm	1/6W	±5%	N-0132ECC	RD16U101J
R313					N-0063ECC	RD16U100J
R314	Carbon film	10 ohm	1/6W	±5%	N-0340ECC	
R315	Carbon film	47k ohm	1/6W	±5%	N-0196ECC	RD16U473J
R316	Carbon film	1k ohm	1/6W	±5%		RD16U102J
R317-	Carbon film	100 ohm	1/6W	±5%	N-0132ECC	RD16U101J
R318	Carbon film	220 ohm	1/6W	±5%	N-0149ECC	RD16U221J
R319	Carbon film	47k ohm *	1/6W	±5%	N-0340ECC	RD16U473J
R320	Carbon film	220 ohm	1/6W	±5%	N-0149ECC	RD16U221J
R321	Carbon film	100 ohm	1/6W	±5%	N-0132ECC	RD16U101J
R322	Carbon film	100k ohm	1/6W	±5%	N-0371ECC	RD16U104J .
R323	Carbon film	100 ohm	1/6W	±5%	N-0132ECC	RD16U101J
R324	Carbon film	47k ohm	1/6W	±5%	N-0340ECC	RD16U473J
R325	Carbon film	220 ohm	1/6W	±5%	N-0149ECC	RD16U221J
R326	Carbon film	100 ohm	1/6W	±5%	N-0132ECC	RD16U101J
R327	Carbon film	220 ohm	1/6W	±5%	N-0149ECC	RD16U221J

Ref. No.		Description			RS Part Number	MFR's Part Number
R328	Carbon film	47k ohm	1/6W	±5%	N-0340ECC	RD16U473J
R329	Chip	1k ohm	1/8W	±5%	ND-0196EBN	ERJ-8GCYJ102
R330	Carbon film	470 ohm	1/6W	±5%	N-0169ECC	RD16U471J
R331	Carbon film	220 ohm	1/6W	±5%	N-0149ECC	RD16U221J
R332	Chip	2.2k ohm	1/8W	±5%	ND-0216EBN	ERJ-8GCYJ222
R333	Chip	4.7k ohm	1/8W	±5%	ND-0247EBN	ERJ-8GCYJ472
R334	Chip	100k ohm	1/8W	±5%	ND-0371EBN	ERJ-8GCYJ104
R335	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J
	Carbon film	220 ohm	1/6W	±5%	N-0149ECC	RD16U221J
R336		1k ohm	1/8W	±5%	ND-0196EBN	ERJ-8GCYJ102
R337	Chip		1/6W	±5%	N-0169ECC	RD16U471J
R338	Carbon film	470 ohm		±5%	ND-0216EBN	ERJ-8GCYJ222
R339	Chip	2.2k ohm	1/8W		ND-0247EBN	ERJ-8GCYJ472
R340	Chip	4.7k ohm	1/8W	±5%	ND-0247EBN	ERJ-8 GCYJ104
R341	Chip	100k ohm	1/8W	±5%	N-0281ECC	
R342	Carbon film	10k ohm	1/6W	±5%		RD16U103J
R343	Carbon film	1k ohm	1/6W	±5%	N-0196ECC	RD16U102J
R344	Not used					55401474
R345	Carbon film	470 ohm	1/6W	±5%	N-0169ECC	RD16U471J
R346	Carbon film	100 ohm	1/6W	±5%	N-0132ECC	RD16U101J
R347	Carbon film	8.2k ohm	1/6W	±5%	N-0271ECC	RD16U822J
R348	Carbon film	330 ohm	1/6W	±5%	N-0159ECC	RD16U331J
R349	Carbon film	4.7k ohm	1/6W	±5%	N-0247ECC	RD16U472J .
R350	Carbon film	100 ohm	1/6W	±5%	N-0132ECC	RD16U101J
R351	Carbon film	100 ohm	1/6W	±5%	N-0132ECC	RD16U101J
R352	Chip	15k ohm	1/8W	±5%	ND-0297EBN	ERJ-8GCYJ153
R353	Carbon film	470 ohm	1/6W	±5%	N-0169ECC	RD16U471J
R354	Chip	4.7k ohm	1/8W	±5%	ND-0247EBN	ERJ-8GCYJ472
R355	Carbon film	33k ohm	1/6W	±5%	N-0324ECC	RD16U333J
R356	Carbon film	4.7k ohm	1/6W	±5%	N-0247ECC	RD16U472J
R357	Carbon film	2.2k ohm	1/6W	±5%	N-0216ECC	RD16U222J
R358	Carbon film	2.2k ohm	1/6W	±5%	N-0216ECC	RD16U222J
R359	Not used					•
R360	Carbon film	5.6k ohm	1/6W	±5%	N-0257ECC	RD16U562J
R361	Not used					
R362	Not used					
R363	Not used					
R364	Carbon film	1k ohm	1/6W	±5%	N-0196ECC	RD16U102J
R365	Carbon film	15k ohm	1/6W	±5%	N-0297ECC	RD16U153J
R366	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J
R367	Carbon film	1k ohm	1/6W	±5%	N-0196ECC	RD16U102J
R368	Carbon film	100 ohm	1/6W	±5%	N-0132ECC	RD16U101J
R369	Carbon film	2.2k ohm	1/6W	±5%	N-0216ECC	RD16U222J
R370	Carbon film	820 ohm	1/6W	±5%		RD16U821J
R371	Carbon film	1k ohm	1/6W	±5%	N-0196ECC	RD16U102J
DE01	Carbon film	100k ohm	1/6W	±5%	N-0371ECC	RD16U104J
R501	i e	1M ohm	1/6W	±5%	N-0445ECC	RD16U105J
R502	Carbon film		1/6W	±5%	N-0281ECC	RD16U103J
R503	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J
R504	Carbon film	10k ohm		±5%	N-0281ECC	RD16U103J
R505	Carbon film	10k ohm	1/6W	±5% ±5%	N-0281ECC	RD16U103J
R506	Carbon film	10k ohm	1/6W			RD16U103J
R507	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J
R508	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	1
R509	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J
R510	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J
R511	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J
R512	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J
R513	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J

Ref. No.		Description			RS Part Number	MFR's Part Number
R514	Carbon film	47k ohm	1/6W	±5%	N-0340ECC	RD16U473J
R515	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J
R516	Carbon film	560k ohm	1/6W	±5%		RD16U564J
R517	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J
R518	Carbon film	47k ohm	1/6W	±5%	N-0340ECC	RD16U473J
R519	Carbon film	47k ohm	1/6W	±5%	N-0340ECC	RD16U473J
R520	Carbon film	47k ohm	1/6W	±5%	N-0340ECC	RD16U473J
R521	Carbon film	47k ohm	1/6W	±5%	N-0340ECC	RD16U473J
R522	Carbon film	47k ohm	1/6W	±5%	N-0340ECC	RD16U473J
R701	Carbon film	4.7k ohm	1/6W	±5%	N-0247ECC	RD16U472J
R702	Carbon film	100 ohm	1/6W	±5%	N-0132ECC	RD16U101J
R703	Carbon film	10 ohm	1/6W	±5%	N-0063ECC	RD16U100J
R704	Carbon film	1.2k ohm	1/6W	±5%		RD16U122J
R705	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J
R706	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J
R707	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J
R708	Carbon film	180k ohm	1/6W	±5%	N-0387ECC	RD16U184J
R709	Carbon film	22 ohm	1/6W	±5%		RD16U220J
R710	Carbon film	150 ohm	1/6W	±5%		RD16U151J
R711	Carbon film	6.8k ohm	1/6W	±5%	N-0262ECC	RD16U682J
R801 <sup>†</sup>	Solid	1.8M ohm	1/2W	±10%	N-0521FFB	ERC-12GK185

<sup>†</sup> See Appendix (page 54) for ITI models.

	CRYSTALS & FILTERS							
Ref. No.		Descriptoin		RS Part Number	MFR's Part Number			
X1 X2 X301 CX501 XF1 XF2 CF1 CF2	Crystal Crystal Crystal Ceramic Oscillat Crystal Filter Crystal Filter Ceramic Filter Ceramic Filter	TC-43 type TC-43 type TX1824G-3 type tor MF48RB type MF48RB type	37.8 MHz 48.045 MHz 10 MHz 7.37 MHz 48.5 MHz 48.5 MHz 10.7 MHz 455 kHz	CX-0551 CX-0552 CX-0480 C-1923 C-1923 C-1924 C-1044	37.8 MHz 48.045 MHz 10 MHz CST7.37MT 48.5 MHz 48.5 MHz SFJ10.7 MA2-A CFW455D			

VARIABLE RESISTORS							
Ref. No. Description			RS Part Number	MFR's Part Number			
VR801 · VR802	Pot. Volume w/Switch Pot. Squelch	50k ohm (A) 10k ohm (C)	P-7787 P-8029	5M1411-50KA-20A K1611008TE-10KC-20			

		MISCELLANEOUS			
Ref. No.	Descript	ion	RS Part Number	MFR's Part Number	
CN-1	Pin, connector	3 Pin Male	J-5678	PI22A03M	
CN-2	Pin, connector	4 Pin Male	J-4050	PI22A04M	
CN-3	Pin, connector	2 Pin Male	J-4051	PI22A02M	
CN-4	Pin, connector	3 Pin Male	J-5678	PI22A03M	
CN-5	Pin, connector	2 Pin Male	J-4051	P122A02M	
CN-6	Pin, connector	3 Pin Male	J-5678	PI22A03M	
CN-501	Pin, connector	9 Pin Male		PI22A09M	
CN-502	Pin, connector	13 Pin Male		PI22A13M	
CN-503	Pin, connector	8 Pin Male		PI22A08M	
CN-504	Pin, connector	15 Pin Male		PI22A15M	
CN-505	Pin, connector	11 Pin Male		PI22A11M	
EL701	Electro Luminescence		L-2082	GE-85D-6011	
J1	Jack		J-5939	TMP-J01X-V1	
J2	Jack		J-5939	TMP-J01X-V1	
J3	Jack, Tape Out		J-1820	JPJ0573-01-010	
J4	Jack Ext. Speaker		J-1821	S-G8036	
J5	Jack, DC		J-1140	HEC0470-01-630	
J6	Jack, Antenna		J-0085	GE-85D-5383	
J801	Jack, Head Phone		J-1824	S-G8022#2	
LCD701	LCD		0-102-	FTD-8200P	
SW1	Switch, slide (Attenuator)		S-3627	SSFZUB22-07	
SW501	Switch, push (Reset)		0 002	SKHHLM	
SW701	Switch, push (Sound Squelch)	•	S-7094	ESB-64500 type 1	
SW702	Switch, push (Dimmer)		S-7094	ESB-64500 type 1	
TH-1	Thermister		T-1024	HT-100	
TP1	Pin, test		1-1024	ERD-25TC0	
TP2	Pin, test			ERD-25TC0	
TP3	Pin, test			ERD-25TC0	
TP4	Pin, test			ERD-25TC0	
TP5	Pin, test			ERD-25TC0	
TP301	Pin, test			ERD-25TC0	
TP302	Pin, test			ERD-25TC0	
11 302	Antenna, rod	•		GE-86D-6519	
	Binder, AC cord			NO.5121/W-140	
	Binder, cord			PLT1M-M/BK-1	
		6 E foot / 111 \		GE-86D-6312	
	Cord, AC Foot	6.5 feet (UL)		OK15	
	Snap, battery w/cable	1 4 4 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	B-0209	UKIS	
SP801		1 type, L=250mm		CM 77VV 2	
SPOUL	Speaker Standard Line Cond		SP-5374	SM-77KY-2	
	Strainrelief, Line Cord		HB-0705	SR-3P-4	
	Switch, push		S-7093	SKHHPK	
	Terminal, solderless		HB-9616	1-SD ,	
	Wire Kit			#327(A)	

# MECHANICAL PARTS LIST

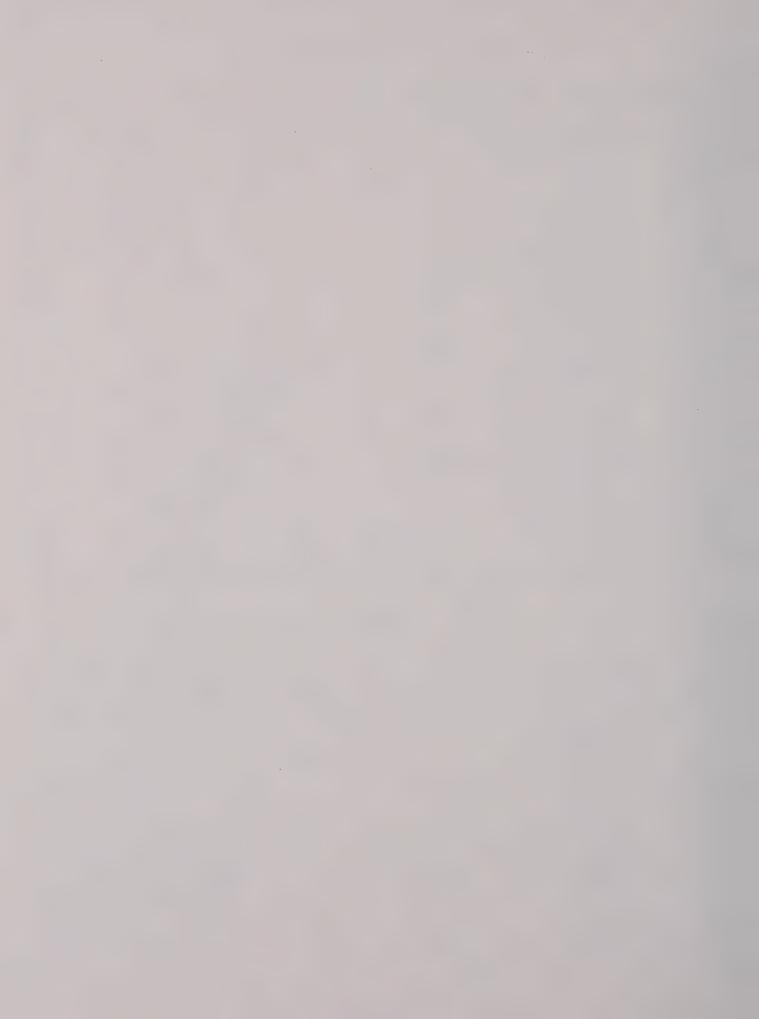
Ref. No.	Description	RS Part Number	MFR's Part Number
1	Cabinet	Z-1484	GE-86B-6360
2	Chassis	-	GE-86A-6359
3	PCB Ass'y, Linear		GA-86D-6316
4	Bracket, Antenna Connector		GE-86D-6362
		J-0085	GE-85D-5383
5 J6	Jack, Antenna	3-0085	GE-86D-6381
6	Shield, Antenna		GE-86D-6377
7	Case, IF Shield		
8	Case, BPF Shield		GE-86D-6379
9	Top, IF Shield		GE-86D-6378
10	Top, BPF Shield		GE-86D-6380
11	Plate, 1st IF Shield		GE-86D-6605
12	Heat Sink		GE-86D-6363
13	PCB Ass'y, PLL		GA-86D-6317
14	Bottom PLL Shield (A) Filter		GE-86D-6511
15	Bottom PLL Shield (A) VCO		GE-86D-6510
16	Bottom PLL Shield (B) IC		GE-86D-6513
17	Bottom PLL Shield (B) VCO		GE-86D-6512
18	Fiber, PLL Shield (A) Filter		GE-86D-6515
19	Fiber, PLL Shield (A) VCO	·	GE-86D-6514
			GE-86D-6517
20	Fiber, PLL Shield (B) IC		GE-86D-6516
21	Fiber, PLL Shield (B) VCO		
22	Case, PLL Shield (A)	1	GE-86D-6368
23	Case, PLL Shield (B)		GE-86D-6372
24	Case, PLL Shield (C)		GE-86D-6376
25	Top, PLL Shield (A)		GE-86D-6369
26	Top, PLL Shield (B)		GE-86D-6373
27	Plate, PLL Shield (D) VCO		GE-86D-6528
28	PCB Ass'y, Logic		GA-86D-6318
29	Case Logic Shield		GE-86D-6388
30	Top, Logic Shield		GE-86D-6389
31	Fiber, Logic Shield		GE-86D-6529
32 T801	Transformer, Power	TA-0127	GE-85D-5667
33	Box, Battery	DB-0741	GE-21D-5728
34	Cover, Battery Compartment	DB-0094	GE-79D-0113
35	Cushion, Battery	33333	GE-21D-5795
36	Cord, AC 6.5 feet (UL)	W-3388	GE-86D-6312
		SP-5374	SM-77KY-2
37 SP801	Speaker 8 ohm 2W	31-5574	GE-86D-6361
38	Bracket Speaker		GE-86D-6505
39	Mattress, Speaker	Z-1483	GA-86D-6385
40	Escutcheon Ass'y, Front (Non Repairable)	2-1463	
	Escutcheon, Front		GE-86A-6354
	Protecter, Escutcheon		GE-86C-6500
	Window, LCD		GE-86D-6355
41	PCB Ass'y, LCD		GA-86D-6319
2 LCD701	LCD		FTD-8200P
43	Electro Luminescence		GE-85D-6067
44	Holder, LCD		GE-85D-6386
45	Cushion, LCD		GE-85D-6521
46	Knob, Dimmer/Sound Squelch	K-1064	GE-86D-6357
47	Shield, LCD		GE-86D-6364
48	Fiber, LCD Shield		GE-86D-6365
49	PCB Ass'y, Keyboard		GA-86D-6320
50			GE-86D-6366
	Shield, Keyboard		GE-86D-6367
51	Fiber, Keyboard		GE-86D-6509
52	Plate, Ground		•
53	Volume, Switch		5M1411-50KA-20A
54	Squeich, Volume		K1611008TE-10KC-2

Ref. No.	Description	RS Part Number	MFR's Part Number
55	Jack, Head Phone	J-1824	S-G8022#2
56	Knob, Volume/Squelch	K-1063	GE-86D-6356
57	Antenna, Telescopic	A-0083	GE-86D-6519
58	Foot	F-0054	OK-15
59	Panel, Keybaord	Z-1482	GE-86D-6358
60	Himelon (A)		GE-86D-6522
61	Himelon (B)		GE-86D-6523
62	Himelon (C)		GE-86D-6524
63	Himelon Speaker		GE-86D-6387
64	Screw, Panhead With Washer Ass'y Tind ZU		PM2.6x5
65	Screw, Panhead With Washer Ass'y ZU		PM3x6
66	Screw, Panhead P tight		PT2.6x5
67	Screw, Panhead Tapping		PT3x6
68	Screw, Panhead		PM3×6
69	Screw, Panhead Tapping		PT2.6×6
70	Screw, Panhead P tight		PT3x8
A 71	Screw, Bindinghead BLK		BM3×6
	Screw, Bindinghead With Washer Ass'y ZU		BM3×12
72	Screw, Bindinghead	HD-1814	BM4x8
73	Screw, Bindinghead Tapping		BT3x6
74	Screw, Bindinghead	*	GE-79D-0541
75	Screw, Countersunkhead Machine	HD-2585	CM3x6
76	Washer, External Toothed Lock 3m/m		ETW 3m/m
77	Washer, Internal Toothed Lock 3m/m	HD-8966	ITW 3m/m
78	Nut, flange serrated		3 DIA
79	Nut, flange serrated		4 DIA
80 .	Nut		7 DIA
81	. Nut, Grommet		•
	Hardware Kit	HW-200019	#327(B)

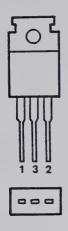
# **APPENDIX**

## Variable parts for each model are below.

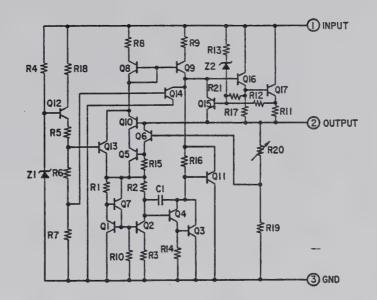
Ref. No.	Description	USA	CANADA	AUSTRALIA	UK
R214	Metal Film	RNS1.0-3R3J	_	RNS1.0-3R3J	RNS1.0-3R3J
	3.3 ohm 1W ±0.5%			•	
	Metal Film	_	ERQ-12AJ-3R3	-	_
	3.3 ohm 1/2W ±0.5%				
R235	Metal Film	RSN1.0-010J	-	RNS1.0-010J	RNS1.0-010J
	1 ohm 1W ±0.5%				
	Metal Film	-	ERQ-1AJ-2R2	-	_
	2.2 ohm 1W ±0.5%				
R801	Solid Film	ERC-12GK-185	ERC-12GK-185	Not used	Not used
	1.8M ohm 1/2W ±10%				
D512	1S2076A (Silicon)	Not used	Not used	1S2076A	1S2076A
T801	Transformer, Power	GE-85D-5667	Z1643	K7087	K7087
	Cord, AC	GE-86D-6312	GE-86D-6312	PZ-ACTF-LD-AS	HAR CLASS II BLK 2m
	Strainrelief, Line Cord	SR-3P-4	SR-3P-4	SR-5N-4	SR-4N-4
	Chassis	GE-86A-6359	GE-86A-6359	GE-86A-6359A	GE-86A-6359A
	3.1333.3				



#### IC8 TA78005AP or HA17805

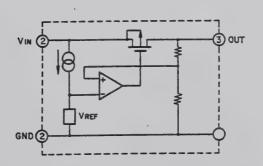


- 1. INPUT
- 2. OUTPUT
- 3. GND

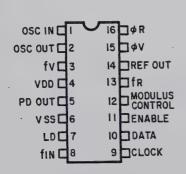


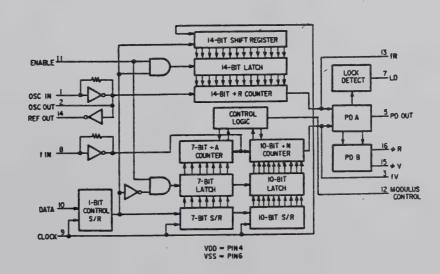
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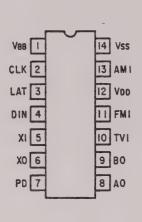


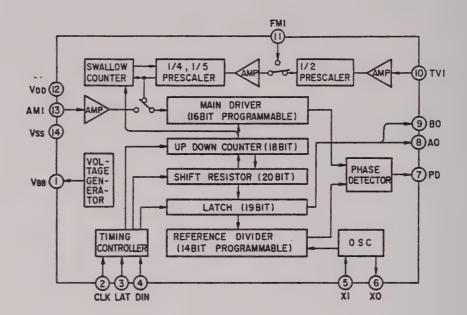
#### IC301 MC145158



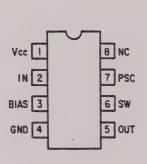


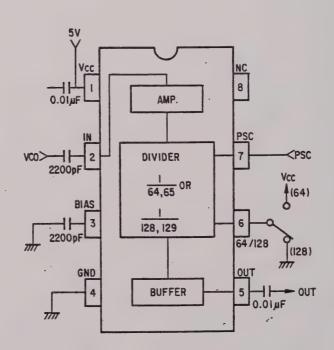
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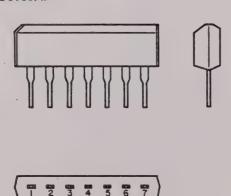


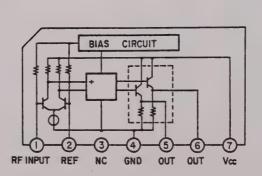
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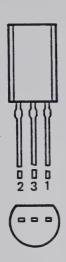


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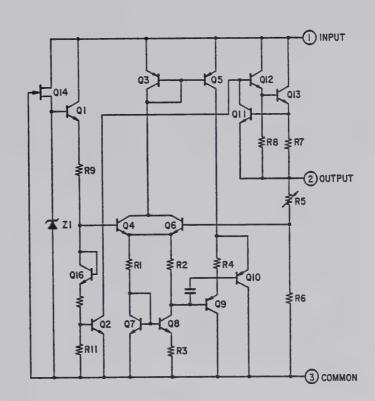




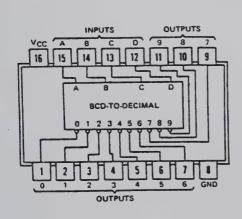
#### IC305, 306 TA78L005AP

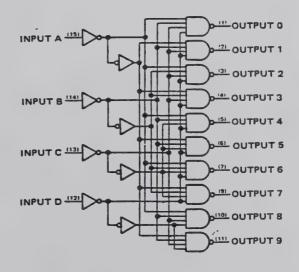


- 1. INPUT
- 2 DUTPUT
- 3. COMMON

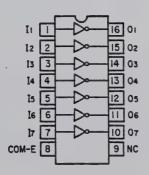


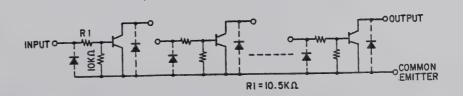
#### IC501 SN74LS145 or HD74LS145

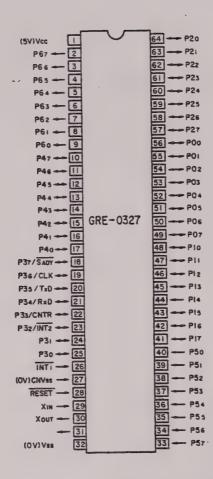


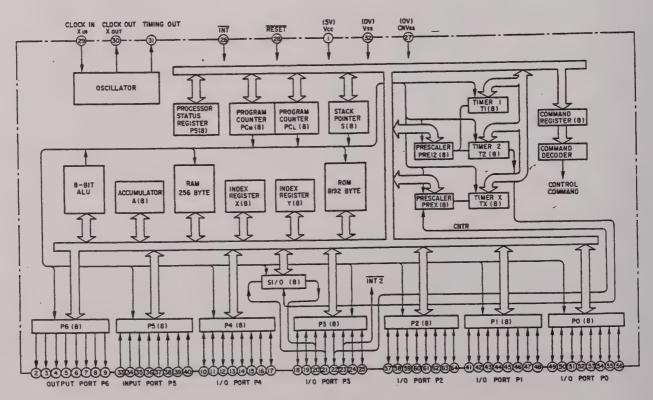


#### IC502 TD62504P

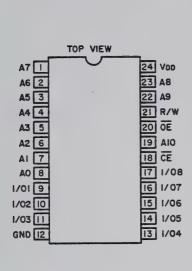


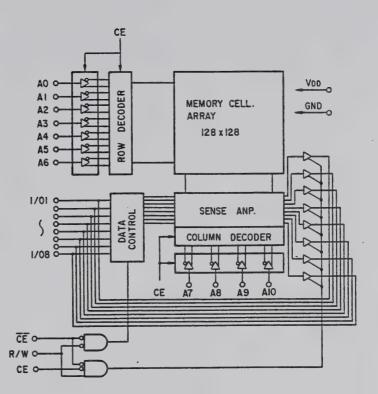




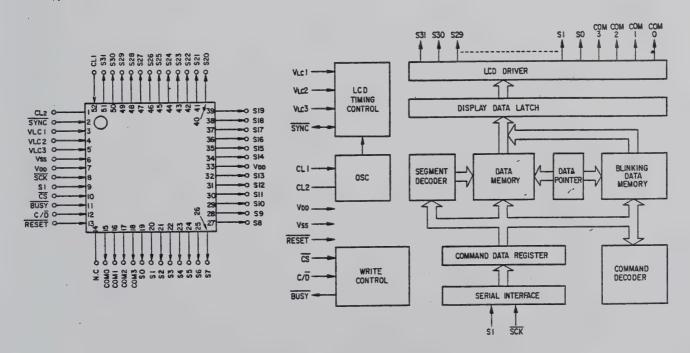


#### IC504 TC5517CF-20 or μPD446G-45





#### IC701 μPD7225G



# TRANSISTOR LEAD IDENTIFICATION

(A) 2SC2458(Y,GR) 2SC2458L(GR) 2SC2668(Y)

2SA1048 2SC3327 RN2201

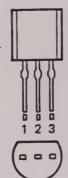


- 1. EMITTER
- 2. COLLECTOR
- 3. BASE

- (B) 2SC3355

2

(C) 2SC3356



1. BASE

2. EMITTER

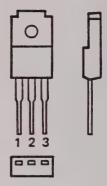
3. COLLECTOR

**口**3 1 🗆



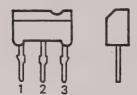
- 1. EMITTER
- 2. BASE
- 3. COLLECTOR

(D) 2SD1406

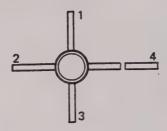


- 1. BASE
- 2. COLLECTOR
- 3. EMITTER

(E) 2SD1330



#### (F) 2SC3358

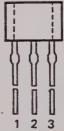


1. EMITTER

3. EMITTER

4. COLLECTOR

2. BASE

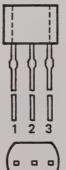




- 2. GATE

- - 1. BASE
  - 2. COLLECTOR
  - 3. EMITTER



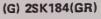


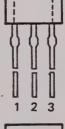
- 1. EMITTER
- 2. COLLECTOR
- 3. BASE

#### (H) 2SK194A(GR)

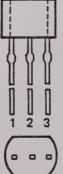


- 1. DRAIN
- 2. SOURCE
- 3. GATE





- 1. DRAIN
- 3. SOURCE



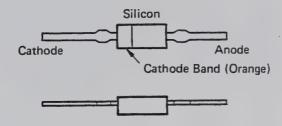
### (J) RN2005



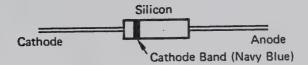
- 1. EMITTER
- 2. COLLECTOR
- 3. BASE

## DIODE IDENTIFICATION AND LEAD POLARITY

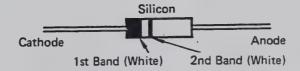
#### A) 1SS241



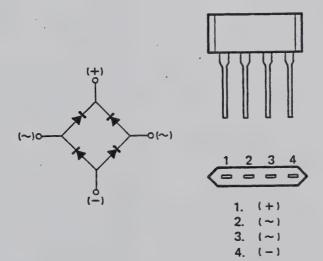
#### B) 1S2076A



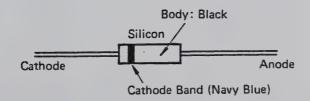
#### C) SR1K-2



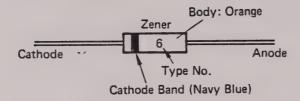
#### D) 1B4B41



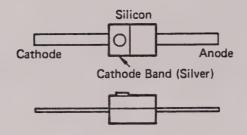
#### E) 1S1585



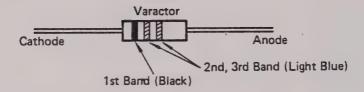
#### F) HZ6B2L, HZ9BLL HZ11BLL



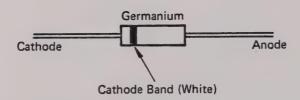
#### G) 1T25



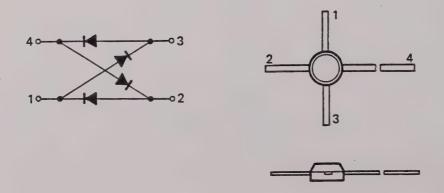
#### H) 1SV89



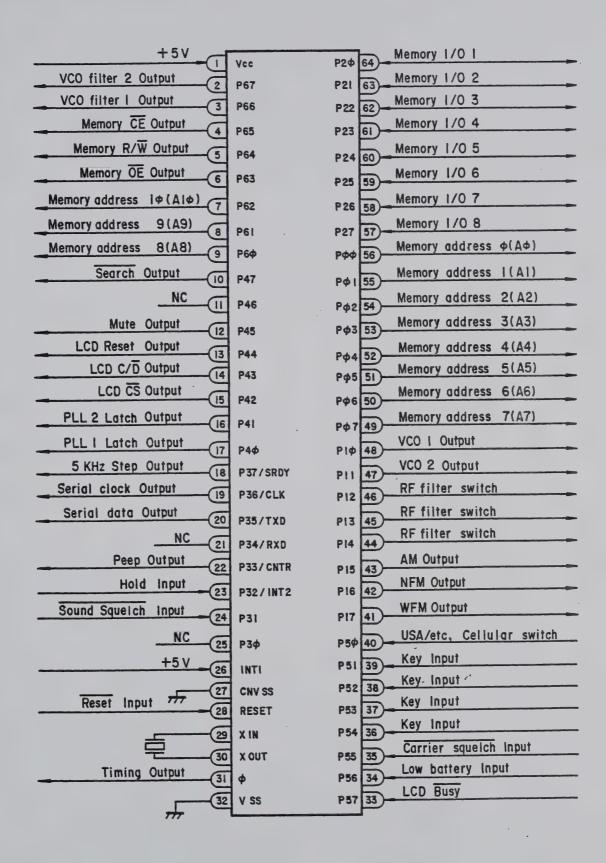
#### I) OA90-R



#### J) ND487CI-3R



## MICROPROCESSOR (IC-503) PIN ALLOCATION



# MICROPROCESSOR (IC-503) PORT FORMAT

Pin No.	Symbol	Function	Pin No.	Symbol	Function
1	VCC	+5 V	33	P57	LCD Busy
2	P67	VCO filter 2 Output	34	P56	Low battery Input
3	P66	VCO filter 1 Output	35	P55	Carrier Squelch Input
4	P67	Memory CE Output	36	P54	Key Input
5	P64	Memory R/W Output	37	P53	Key Input
6	P63	Memory OE Output	38	P52	Key Input
7	P62	Memory address 10 (A10)	39	P51	Key Input
8	P61	Memory address 9 (A9)	40	P50	USA/etc., Cellular Switch
9	P60	Memory address 8 (A8)	41	P17	WFM Output
10	P47	Search Output	42	P16	NFM Output
11	P46	NC .	43	P15	AM Output
12	P45	Mute Output	44	P14	RF filter Switch
13	P44	LCD Reset Output	45	P13	RF filter Switch
14	P43	LCD C/D Output	46	D12	RF filter Switch
15	P42	LCD CS Output	47	P11	VCO 2 Output
16	P41	PLL 2 Latch Output	48	P10	VCO 1 Output
17	P40	PLL 1 Latch Output	49	P07	Memory address 7 (A7)
18	P37/SRDY	5 kHz Step Output	50	P06	Memory address 6 (A6)
19	P36/CLK	Serial Clock Output	51	P05	Memory address 5 (A5)
20	P35/TxD	Serial Data Output	52	P04	Memory address 4 (A4)
21	P34/RxD	NC	53	P03	Memory address 3 (A3)
22	P33/CNTR	Peep Output	54	P02	Memory address 2 (A2)
23	P32/INT2	Hold Input	55	P01	Memory address 1 (A1)
24	P31	Sound Squelch Input	56	P00	Memory address 0 (A0)
25	P30	NC	57	P27	Memory I/O 8
26	INT1	+5 V	58	P26	Memory I/O 7
27	CNVSS	GND	59	P25	Memory I/O 6
28	RESET	Reset Input	60	P24	Memory I/O 5
29	XIN	Clock Input	61	P23	Memory I/O 4
30	XOUT	Clock Output	62	P22	Memory I/O 3
31	0	Timing Output	63	P21 .	Memory I/O 2
32	VSS	0 V	64	P20	Memory I/O 1

# MICROPROCESSOR (IC-503) FUNCTION TABLE

## (1) Outputs of VCO (P10, P11) and VCO filter (P66, P67)

Receiving Frequency (MHz)	VCO Output	VCO filter Output	
25.0000 to 220.4950	VCO 1 (P10) "H"	VCO filter 1 (P66)	
220.5000 to 520.0000	VCO 2 (P11) "H"	"H" Level	
760.0000 to 1052.4950	VCO 1 (P10) "H"	VCO filter 2 (P67)	
1052.5000 to 1300.0000	VCO 2 (P11) "H"	"H" Level	

#### (2) Outputs of RF filter (P12, P13, P14)

Receiving Frequency (MHz)	P12	P13	P14
25.0000 to 39.9950	Н	L	L
40.0000 to 67.9950	L	Н	L
68.0000 to 107.9950	Н	Н	L
108.0000 to 173.9950	L	L	Н
174.0000 to 279.9950	Д	L	Н
280.0000 to 520.0000	L	Н	Н
760.0000 to 1300.0000	Н	Н	Н

#### (3) Outputs of Search (P47) and 5 kHz Step (P37)

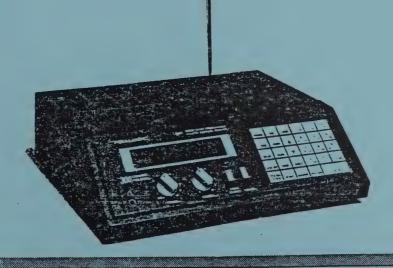
			Search Output (P47)	5 kHz Step Output (P37)
MANUAL Operation		. Н	L	
PROGRAM Operation			Н	L
SCAN	SCAN Operation		Н	L
	Receiving Frequency 25 to 520 MHz	at 5 kHz Step	L	Н
In SEARCH		at Other Step	L	L
Operation	Receiving Frequency 760 to 1300 MHz	at 5 kHz Step	· L	Н
		at Other Step	L	L

REALISTIC®

# Service Manual

PRO-2004
PROGRAMMABLE SCANNER
GENERAL COVERAGE
AM/FM MONITOR RECEIVER

Catalog Number: 20-119/9119



CUSTOM MANUFACTURED FOR RADIO SHACK, A DIVISION OF TANDY CORPORATION



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#### PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special characteristics. These characteristics often pass unnoticed and the protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts that have these special safety characteristics are identified in this manual and its supplements; electrical components having such features are identified by a A in the schematic diagram and the parts list.

Before replacing any of these components, read the parts list in this manual carefully. The use

Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts that do not have the same safety characteristics as specified in the parts list may create shock, fire or other hazards.

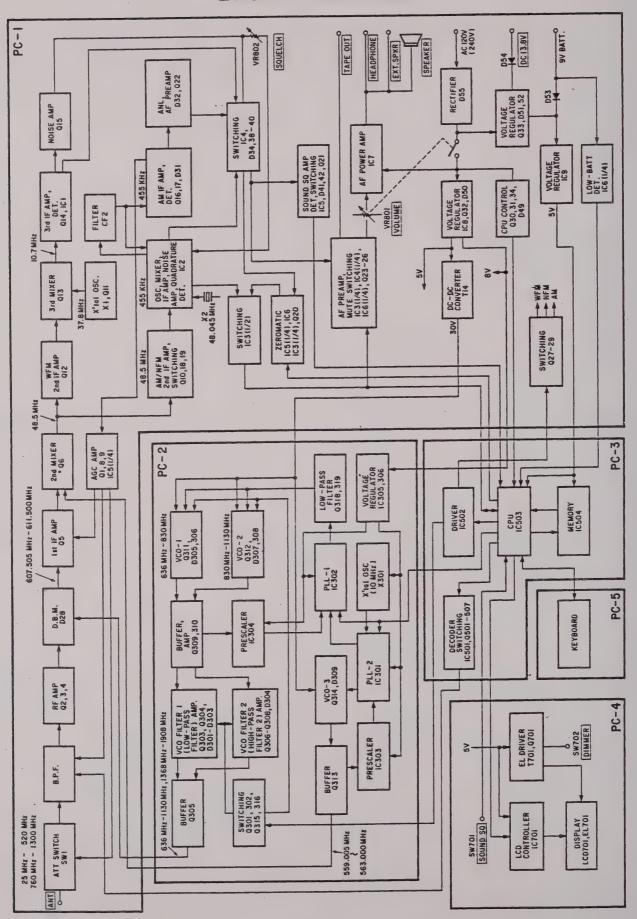
# **SPECIFICATIONS**

DE	SCRIPTION	NOMINAL SPEC.	LIMIT SPEC.
Frequency Range			25 to 520 MHz
			760 to 1300 MHz
Sensitivity			
NFM: 20 dB	S/N at 3 kHz DEV. 1 kHz		
	25 to 520 MHz	0.5 μV	2.0 μV
	760 to 1100 MHz	0.5 μV	2.0 μV
	1100 to 1300 MHz	3.0 μV	10.0 μV
AM: 20 dB	S/N at 60% MOD. 1 kHz	20	5.0 μV
	25 to 520 MHz	2.0 μV 2.0 μV	5.0 μV
	760 to 1100 MHz 1100 to 1300 MHz	3.0 µV	10.0 μV
WFM: 30 dB	S/N at 22.5 kHz DEV. 1 kHz	3.0 μ ν	10.0 # 4
WEINI: 30 GB	25 to 520 MHz	3.0 μV	10.0 μV
	760 to 1100 MHz	3.0 µV	10.0 μV
	1100 to 1300 MHz	10.0 μV	20.0 µV
Selectivity	1100 to 1000 time.	10.0 2	
NFM/AM			
141 141/ 7-141	<b>−6</b> dB	±9 kHz	±12 kHz
	-50 dB	±15 kHz	±18 kHz
WFM			
	6 dB	±150 kHz	±200 kHz
	-50 dB	±300 kHz	±400 kHz
Modulation Acceptar	SCS: FIA RS-204-A	±8 kHz	±5 kHz
Spurious Rejection	106. EIA 110-204-A	,=0 K112	
	B MHz (NFM)	40 dB	35 dB
	MHz (NFM)	35 dB	25 dB
-	MHz + (2x610 MHz)		
	290 MHz		
IF Rejection			
	/IHz at 70 MHz (NFM)	60 dB	40 dB
	/IHz at 1000 MHz (NFM)	60 dB	40 dB
Signal to Noise Ratio		40.15	00.15
NFM/AM		40 dB	30 dB
	z DEV. at 1 kHz		
	MOD. at 1 kHz		
WFM	V INPUT	45 dB	35 dB
	kHz DEV. at 1 kHz	45 dB	33 GB
Squelch Sensitivity			
NFM/AM			
Threshold	25 to 520 MHz	0.5 μV	2.0 μV
	760 to 1100 MHz	0.5 μV	2.0 μV
	1100 to 1300 MHz	3.0 μV	10.0 μV
Tight	(S + N/N)	25 dB	15 dB
WFM			
Threshold	25 to 520 MHz	3.0 μV	10.0 μV
	760 to 1100 MHz	3.0 μV	10.0 μV
	1100 to 1300 MHz	10.0 μV	20.0 μV
Tight	(S + N/N)	40 dB	30 dB
Scanning Rate	Fast	16 channel/sec.	14 to 18 channel/sec.
	Load		
	Slow	8 channel/sec.	7 to 9 channel/sec.

Search Rate			
Fast Slow	16 steps/sec. 8 steps/sec.	14 to 18 steps/sec. 7 to 9 steps/sec.	
Residual Noise (Vol. Min.)	3 mV	5 mV	
Priority Sampling	2 sec.	1.5 to 2.5 sec.	
Scan Delay Time	2 sec.	1.5 to 2.5 sec.	
Audio Output Power (T.H.D. 10%)	1.8 W	1.3 W	
Tape Output			
MOD. and DEV:			
NFM 3 kHz DEV. at 1 kHz		300 mV	
AM 60% MOD. at 1 kHz	600 mV	300 m v	
WFM 45 kHz DEV. at 1 kHz			
LOAD: 10 k ohm			
INPUT: 100 μV	4.5 V	4.5 ± 0.5 V	
Channels of Operation	Any 300 channels in ar (30 channels x 10 bank		
	channels.	is), and to monitor	
Channel Fraguency and Made Display	Liquid crystal display		
Channel, Frequency and Mode Display Receiving System	Direct Key Entry Digital Controlled		
neceiving system	Synthesizer, Superheterodyne.		
Power Source	AC 120 V, 60 Hz, 20 W max.		
, tower source	DC 13.8 V, 12 W max.		
Speaker	Built-in 3" (77 mm) 8 ohm Dynamic Speaker		
Dimensions	Approx. 2-7/8" (75 mm) x 10-1/4" (275 mm)		
	x 9" (230 mm) HWD		
Weight	7.0 lbs (3.2 kg.)		

NOTE: Nominal Specs represent the design specs: all units should be able to approximate these — some will exceed and some may drop slightly below these specs. Limit Specs represent the absolute worst condition that still might be considered acceptable, in no case should a unit perform to less than within any Limit Spec.

## **BLOCK DIAGRAM**



#### PRINCIPLES OF OPERATION

The PRO-2004 is a Phase Locked Loop (PLL) synthesized VHF/UHF, AM/FM Receiver controlled by a Central Processing Unit (CPU) via the keyboard.

Receiving mode and search step are initially set to correspond with the frequencies entered. When a frequency within FM broadcast band is keyed in, receiving mode is set to Wideband FM (WFM). When a frequency in Action radio band, Police, Fire, Ambulance, Ham radio etc. is keyed in, the mode is set to Narrowband FM (NFM), and when a frequency in Aircraft and CB band is keyed in, it sets to AM mode. Also the mode and step can be changed by MODE, STEP Keys.

The CPU (IC-503) controls receiving frequency range, frequency determination, scanning speed, delay time, etc. The CPU is able to do only the assigned functions, and no modification of the CPU is feasible.

The following paragraphs explain the operation of the circuit in terms of the functional blocks:

RF input circuit comprises 10 dB attenuator and Bandpass filter. A signal generated by VCO-1 or VCO-2 is applied to Double balanced mixer (D.B.M.) via Low-pass or High-pass filter and mixed with the RF signal. The D.B.M. is employed to facilitates 25 MHz to 1300 MHz mixing.

The 1st IF (Q5) is 607.505 MHz to 611.500 MHz, and the signal is mixed with VCO-3 frequency at the 2nd mixer (Q6) to produce 48.5 MHz signal, which is applied to WFM IF (Q12) or AM/NFM IF (Q10, Q18, Q19). Corresponding with input from the keyboard, CPU determines which of VCO-1 or VCO-2, WFM IF, AM/NFM, AM IF, Data of PLL circuit to be functioned, and outputs the necessary data.

A signal entered to AM/NFM IF is mixed with X'tal oscillation frequency 48.045 MHz at the 3rd mixer (IC-2) and converted to 455 kHz signal. A signal entered to WFM IF is mixed with X'tal oscillation frequency 37.8 MHz at the 3rd mixer (Q13) and converted to 10.7 MHz signal. The signals are further amplified and detected to AF signal.

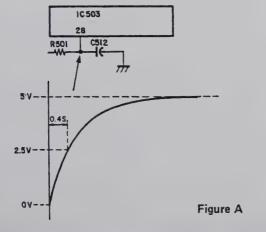
AF signals of WFM, AM, NFM are CPU controlled and applied to AF Power Amplifier (IC-7) via switching circuit. Squelch signal is comprised of noise product from WFM/NFM detector output, and amplified by IC-2 to switching signal, which controls AF mute and CPU.

Any unstable supply voltage to the CPU can produce CPU malfunctions, such as wrong data processing, wrong data transfer, etc. To overcome this C512 and R501 "initialize" the CPU. Initialization is done when RESTART switch is pushed. Figure A shows initializing waveform.

CX501 (7.37 MHz) is a clock which is used for CPU control. Figure B shows 1/4 divided waveform at Pin .31 of IC-503.

CPU output data display frequency, function, etc. on LCD. LCD is back lighted with Electro Luminescence, which works from 70 V rms, 300 Hz A.C.

Power supply comprises D.C 30 V, 8 V and two 5 V lines.



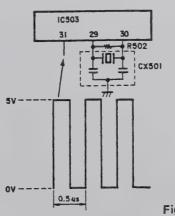
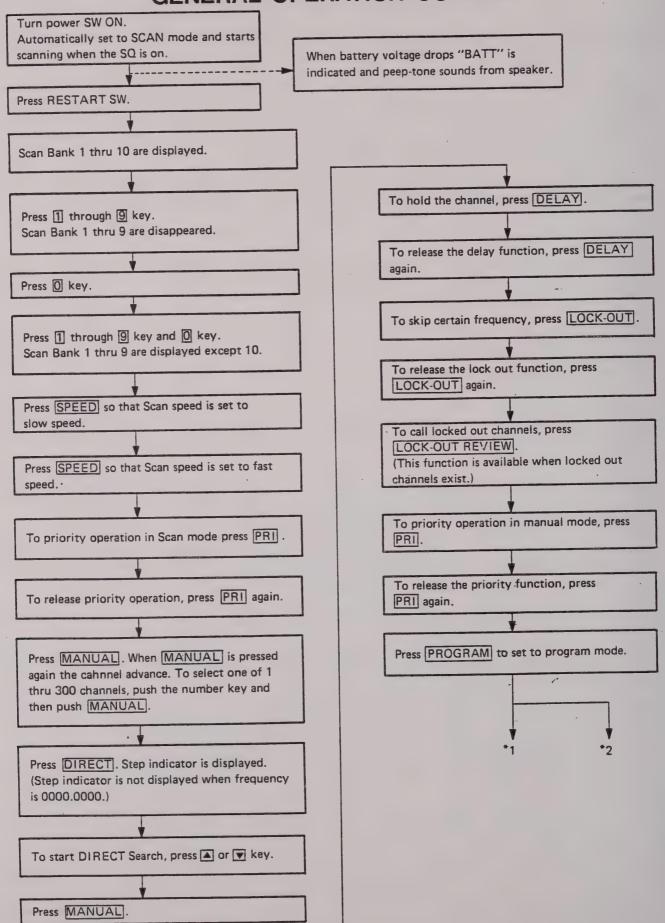
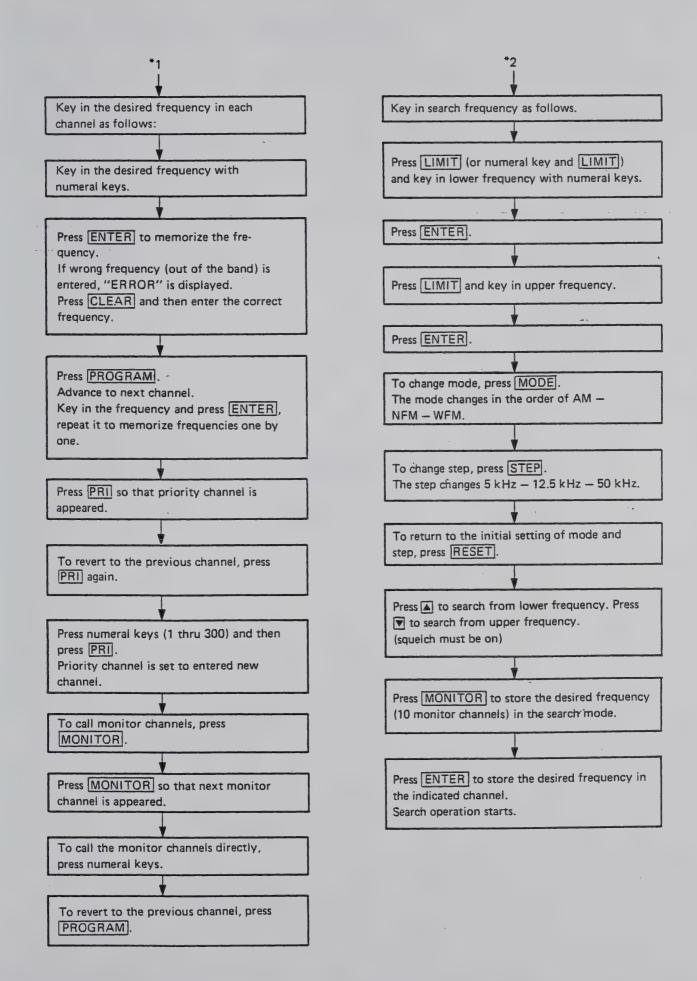


Figure B

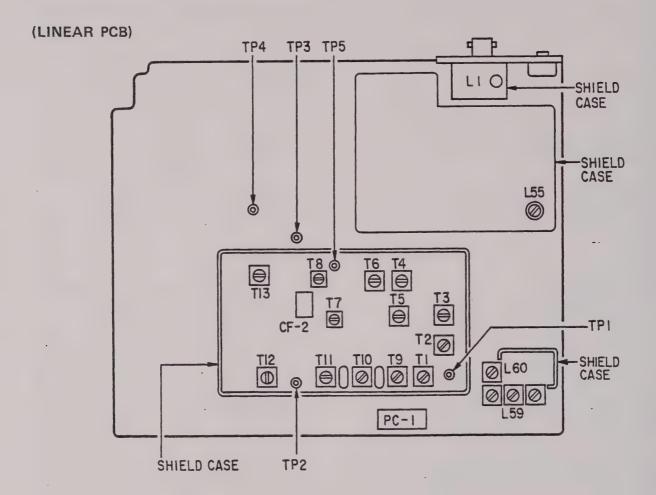
# GENERAL OPERATION OUTLINE



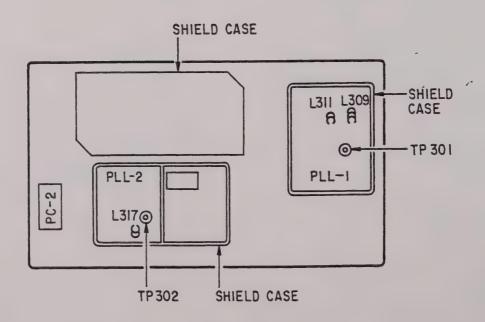


## **ALIGNMENT**

#### **ALIGNMENT AND TEST POINTS**



(PLL PCB)



#### **ALIGNMENT PREPARATION**

#### Test equipment required

- 1. Oscilloscope
- 2. AC SSVM
- 3. DC SSVM
- 4. 8-ohm dummy load
- 5. AM. FM. Signal Generator (25 to 1300 MHz)
- 6. Distortion Meter

#### NOTE 1: Use non-metallic tuning tools.

The test equipment and Receiver should be warmed up at least 30 minutes before proceeding with alignment.

Input signal from the Generator should be kept as low as possible and still obtain usable output.

# **ALIGNMENT PROCEDURES**

Step	Control Setting Channel Programming	Test Instrument Connection	Adjust	Remarks
1	OFF/VOLUME control: ON SQUELCH control: Fully counterclockwise (CCW) Channel Programming: CH1 (220.495 MHz) CH2 (520 MHz)	Connect DC SSVM to TP301 (Figure 1)	L309 L311	Alignment of VCO (PLL-1)  1) Select Channel 1 (220.495 MHz) and adjust L309 for 20V on the DC SSVM. See Table 1.  2) Select Channel 2 (520 MHz) and adjust L311 for 20V on the DC SSVM. See Table 1.
2	OFF/VOLUME control: ON SQUELCH control: Fully CCW Channel Programming: CH3 (804.5 MHz)	Connect DC SSVM to TP302 (Figure 2)	L317	Alignment of VCO (PLL-2)  Adjust L317 for 3V on the DC SSVM.  See Table 1.

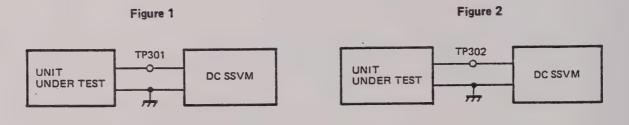
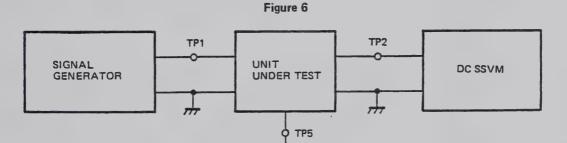


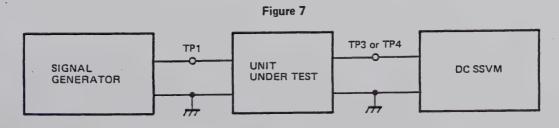
Table 1

Coil L309, L311, L317	Coil alignment (open)	Coil alignment (close)
Figure 3	Figure 4	Figure 5
Coil Use non metallic tuning tool	Coil PLL P.C.B.	Coil PLL P.C.B.
NOTE 1: Perform coils interval alignment delicately because it affects frequency much.  NOTE 2: Fix the coils with glue after alignment and then repeat the ALIGNMENT PROCEDURES Step 1, Step 2 after checking the fixation and temperature is normal.	* Open the coil as shown above by using non metallic tuning tool when a measuring voltage at TP301 or TP302 is higher than the setting voltage.	* Close the coil as shown above by using non metallic tuning tool when a measuring voltage at TP301 or TP302 is lower than the setting voltage.

Step	Control Setting Channel Programming	Test Instrument Connection	Adjust	Remarks
3	OFF/VOLUME control: ON SQUELCH control: Fully counterclockwise Channel Programming: CH4 (250 MHz -NFM)	Connect Signal Generator to TP1, DC SSVM to TP2 and TP5 to ground. (Figure 6)	T1 T9 T10 T11 T12	Alignment of NFM/AM 2nd IF  1) Set the Signal Generator frequency to 48.5 MHz, 0.3 V output (NO MOD).  2) Adjust T1, T9, T10, T11 to maximum voltage at TP2.  3) Adjust T12 to minimum voltage at TP2, approx. 0.2V on the DC SSVM.  NOTE: Perform these adjustment by using the DC SSVM which is able to measure to three decimal places because of the output voltage of TP2 is low.

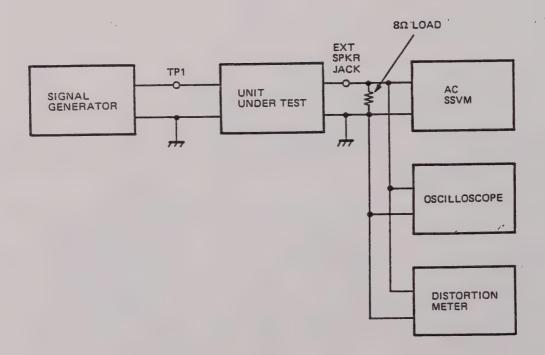


Step	Control Setting Channel Programming	Test Instrument Connection	Adjust	Remarks	
4	4 OFF/VOLUME control: Connect Signal ON Generator to TP1 and		T13	Alignment of 455 kHz NFM Discriminator coil	
	SQUELCH control: Fully CCW Channel Programming: CH4 (250 MHz - NFM)	DC SSVM to TP4. (Figure 7)		Set the Signal Generator frequency to 48.5 MHz, 100 $\mu$ V output (NO MOD) and adjust T13 for 3.8V (±0.1) on the DC SSVM.	
5	5 OFF/VOLUME control: Connect Signal ON Generator to TP1 and		Т6	Alignment of 10,7 MHz WFM Discriminator coil	
	SQUELCH control: Fully CCW Channel Programming: CH5 (98 MHz - WFM)	DC SSVM to TP3. (Figure 7)	ully CCW (Figure 7) annel Programming:		Set the Signal Generator frequency to 48.5 MHz, 100 $\mu$ V output (NO MOD) and adjust T6 for 3.8V (±0.1) on the DC SSVM.

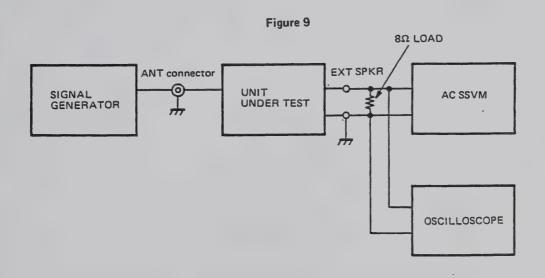


Step	Control Setting Chanel Programming	Test Instrument Connection	Adjust	Remarks
6	OFF/VOLUME control: ON SQUELCH control: Fully CCW Channel Programming: CH6 (120 MHz - AM)	Connect Signal Generator to TP1 and Oscilloscope, AC SSVM, Distortion Meter, 8Ω Load to EXT SPKR JACK. (Figure 8)	Т7	Alignment of 455 kHz IF coil  1) Set the Signal Generator frequency to 48.5 MHz,  AM: 60% MOD. at 1 kHz and 100 µV output  2) Adjust T7 to maximum sensitivity.
7	Same as step 6	Same as step 6	Т8	Alignment of 455 kHz AM DET. coil  1) Set the Signal Generator frequency to 48.5 MHz, AM: 60% MOD. at 1 kHz and 100 μV output.  2) Adjust T8 to minimum T.H.D. point.

Figure 8



Step	Control Setting Channel Programming	Test Instrument Connection	Adjust	Remarks
8	OFF/VOLUME control: ON SQUELCH control: Fully CCW Channel Programming: CH5 (98 MHz - WFM)	Connect Signal Generator to ANT, connector and Oscilloscope, AC SSVM, 8Ω LOAD to EXT SPKR JACK. (Figure 9)	T2 T3 T4 T5	Alignment of 48.5 MHz and 10.7 MHz WFM IF coils  1) Set the Signal Generator frequency to 98 MHz FM: 22.5 kHz DEV. at 1 kHz MOD, output approx. 2 μV.  2) Adjust T2, T3 to maximum sensitivity.  NOTE: Alignment of T4, T5 are not necessary. When those core are turned, adjust cores so that those tops of cores become as high as those coil case.



Step	. Control Setting Channel Programming	Test Instrument Connection	Adjust	Remarks
9	OFF/VOLUME control: ON SQUELCH control: Fully CCW Channel Programming: CH7 (300.495 MHz – NFM)	Same as step 8	L1 L55	Alignment of IF TRAP coils  1) Set the Signal Generator frequency to 609.505 MHz FM: 3 kHz DEV. 1 kHz MOD. Output, approx. 3 mV  2) Adjust L1 and L55 to minimum sensitivity.
10	OFF/VOLUME control: ON SQUELCH control: Fully CCW Channel Programming: CH8 (240.495 MHz – NFM)	Same as step 8	L60	Alignment of 512 MHz TRAP coil  1) Set the Signal Generator frequency to 337.495 MHz FM: 3 kHz DEV. 1 kHz MOD, Output, approx. 3 mV  2) Adjust L60 to minimum sensitivity.

NOTE: Alignment of L59 (GR-H763, B.P.F. coil)

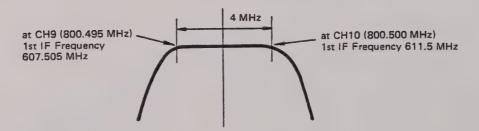
Do not adjust this coil because of L59 is already adjusted at Factory. When turn the coil core, perform the alignment as below (step 11).

B.P.F. characteristic is Figure 10.

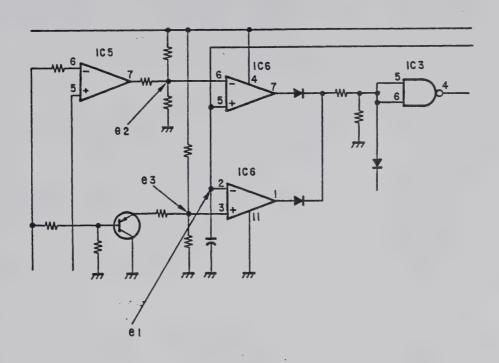
Step	Control Setting Channel Programming	Test Instrument Connection	Adjust	Remarks
11	OFF/VOLUME control: ON	Same as step 8 (Figure 9)	L59	Alignment 1st IF (611.5 to 607.505 MHz) B.P.F. coil
	SQUELCH control: Fully CCW Channel Programming: CH9 (800.495 MHz) CH10 (800.500 MHz)			<ol> <li>Select channel 7 (800.495 MHz) and set the Signal Generator frequency to 800.495 MHz,         FM: 3 kHz DEV. at 1 kHz and 1 μV output.</li> <li>Adjust L59 to maximum sensitivity.</li> <li>Select channel 8 (800.500 MHz) and set the Signal Generator frequency to 800.500 MHz,         FM: 3 kHz DEV. at 1 kHz and 1 μV output.</li> <li>Adjust L59 to maximum sensitivity.</li> <li>NOTE: Align the balance of CH9, CH10 sensitivity to become same.</li> </ol>

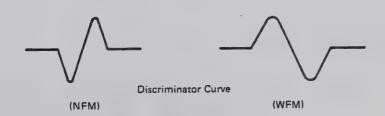
Figure 10

1st IF Center Frequency (609.505 MHz)



#### ZEROMATIC FUNCTION TEST PROCEDURE





(Zeromatic functions when OUTPUT is in "H" level.)

	0 < e1 < e3	e3 < e1 < e2	e2 < e1 < VCC
OUTPUT (IC3 Pin No. 4)	L	Н	L

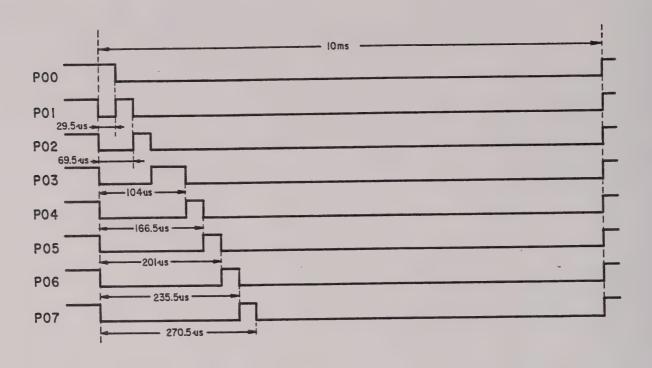
#### (NFM MOD.)

To adjust e1 voltage, receive signal in Manual mode, and set T13 to obtain 3.8 V ( $\pm 0.1$  V) at TP4. It is convenient to use the National Weather Service signal for the adjustment.

#### (WFM MOD.)

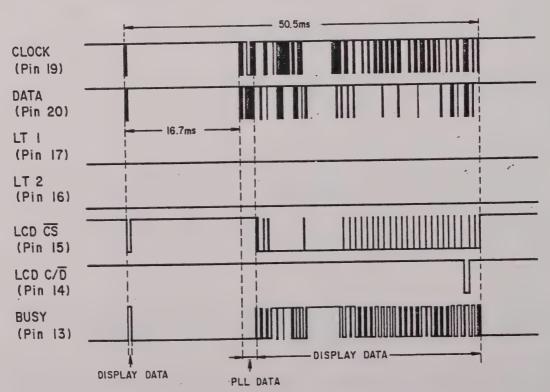
To adjust e1 voltage, receive signal in Manual mode and set T6 to obtain 3.8 V (±0.1 V) at TP3. It is convenient to use the FM. TV. sound signal for the adjustment.

# **KEYS ACCESS PULSE OUTPUT (IC-503)**



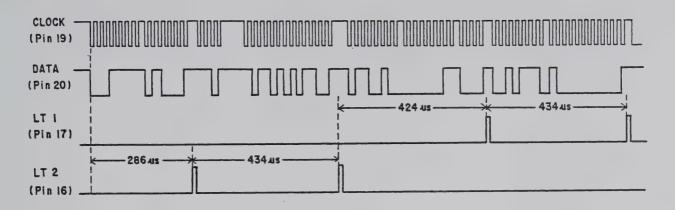
NOTE: Use a signal at P01 of IC-503 as trigger, and then observe the keys access pulse when PROGRAM key is pressed.

## **DATA WAVEFORM (IC-503)**



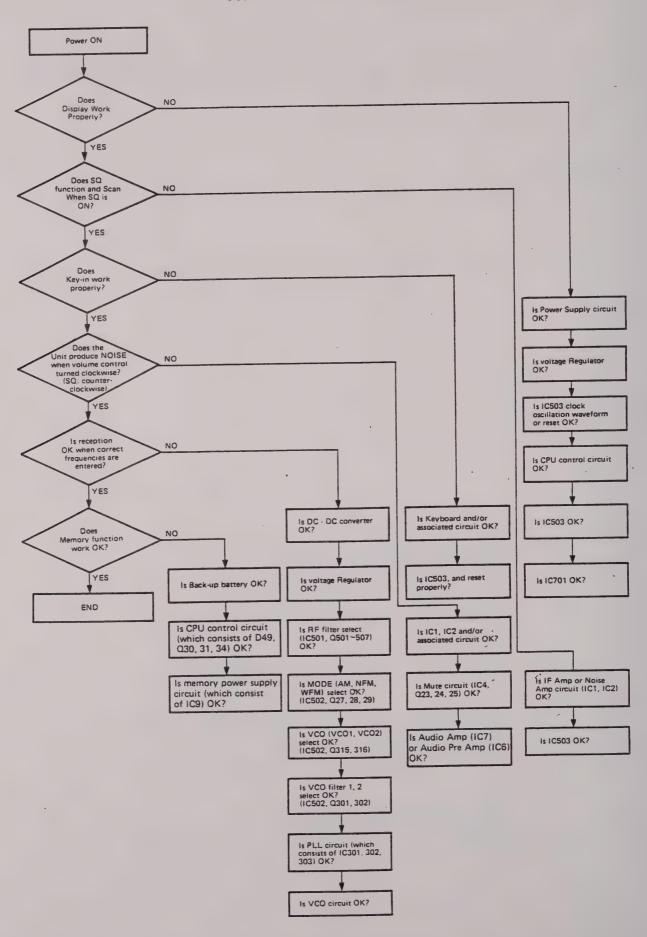
47

#### PLL DATA WAVEFORM

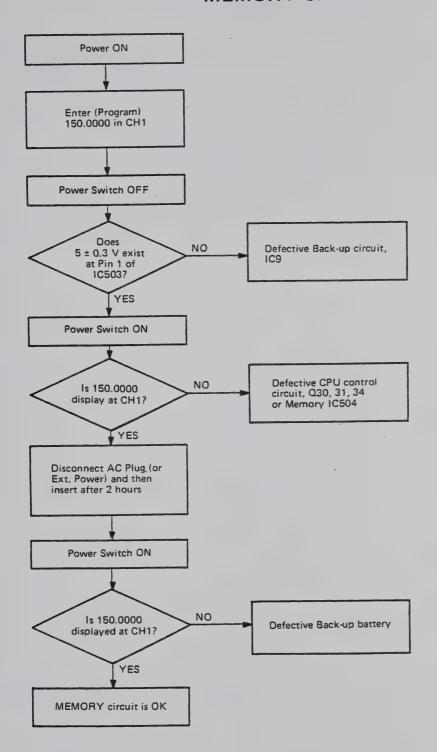


NOTE: Data in Program mode when 150.000 MHz entered.

#### RECEPTION CHECK



#### MEMORY CHECK



# TROUBLESHOOTING

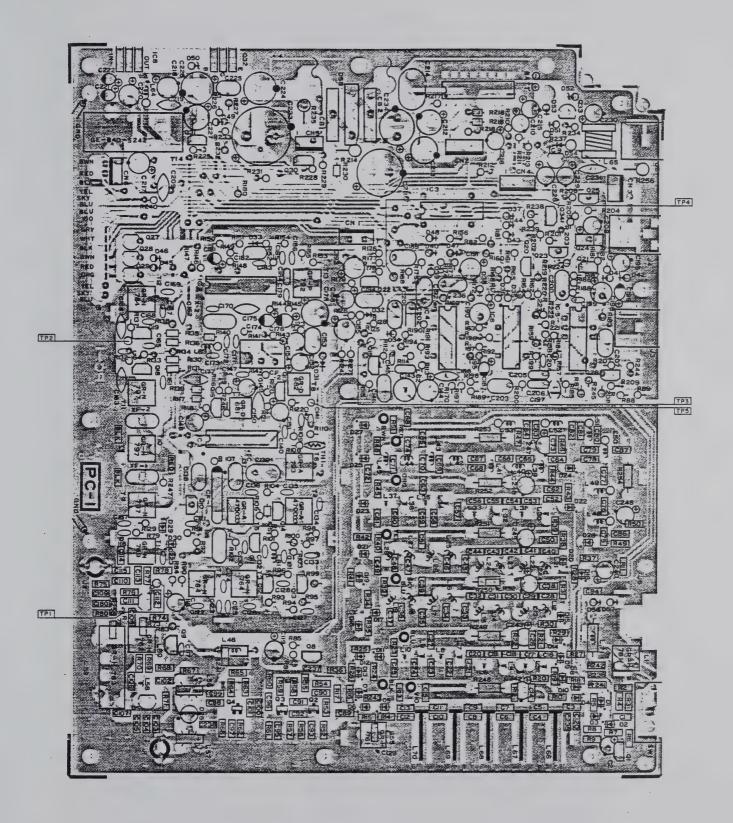
Symptom	Cause/Remedy
1) Does not display and no sound when POWER is ON. Volume control: MAX. Squelch control: CCW (counter-clockwise)	<ol> <li>Defective AC Line Cord: Replace.</li> <li>Defective Power transformer T801: Replace.</li> <li>Defective Off/Volume control VR801: Replace.</li> <li>Defective Rectifier D55: Replace.</li> <li>Defective voltage regulator circuit: Replace the defective components.</li> <li>Defective CPU control circuit consists of Q30, Q31, Q34, D49: Replace the defective components.</li> </ol>
2) Displays but no sound.	<ol> <li>Defective speaker or headphone jack: Replace.</li> <li>Defective Audio Amp. circuit consists of IC7: Replace the defective components.</li> <li>Defective IF Amp. circuit consists of IC1, IC2: Replace the defective components.</li> <li>Defective Squelch control circuit consists of IC3, IC4: Replace the defective components.</li> <li>Defective AF Pre Amp. circuit consists of IC6: Replace the defective components.</li> <li>Defective Audio Mute Switching circuit consists of IC3, IC4 and Q23, Q24, Q25: Replace the defective components.</li> <li>Defective Switching circuit consists of IC4, D34, D38, D39 and D40: Replace the defective components.</li> </ol>
3) Sounds but no display	<ol> <li>1) IC503 is running "wild": Press RESTART Switch.</li> <li>2) Defective initiate control circuit: Replace the defective components.</li> <li>3) Defective voltage regulator circuit consists of IC9: Replace the defective components.</li> <li>4) Defective LCD: Replace.</li> <li>5) Defective CPU circuit consists of IC503: Replace the defective components.</li> <li>6) Defective LCD Controller circuit consists of IC701: Replace the defective components.</li> </ol>
4) Backlight does not light	<ol> <li>Defective EL Driver circuit consists of T701, Q701: Replace the defective components.</li> <li>Defective EL: Replace.</li> </ol>
5) Does not squelch and does not scan.	1) Defective Switching circuit consists of IC3: Replace IC3. 2) Defective IC2 squelch control output terminal: Replace IC2. 3) Defective voltage regulator circuit consists of Q32, D50: Replace the defective components.
6) Squelch operates but does not scan.	1) IC503 is running "wild": Press RESTART Switch.     2) Defective CPU circuits: Replace the defective components.
7) Operates in MANUAL but does not operate in SCAN.	Squelch control is not adjusted correctly: Adjust Squelch (VR802).
Displays but PROGRAM does not operates.	Defective Keyboard or connector and/or associated circuit: Replace the defective components.

Symptom	Cause/Remedy
9) No sound in AM mode but NFM, WFM operate.	<ol> <li>Defective IC502 or IC503: Replace.</li> <li>Defective Switching circuit consists of Q29, D40, D45: Replace the defective components.</li> <li>Defective ANL, AF Pre Amp. circuit consists of D32, Q22: Replace the defective components.</li> <li>Defective AM IF DET. circuit consists of Q16, Q17, D31: Replace the defective components.</li> </ol>
10) No sound in NFM mode but AM, WFM operate.	1) Defective IC502 or IC503: Replace. 2) Defective Switching circuit consists of Q28, D46: Replace the defective components.
11) No sound in AM and NFM MODE but WFM operate.	1) Defective IC2: Replace.
12) No sound in WFM mode but AM, NFM operate.	1) Defective IC502, 503 or IC1: Replace. 2) Defective Switching circuit consists of Q27, D47: Replace the defective components.
13) Low sensitivity between 25.0000 to 39.9950 MHz.	Defective DECODER SWITCHING circuit consists of IC501, Q501:     Replace the defective components.     Defective Bandpass filter (B.P.F): Replace the defective components.
14) Low sensitivity between 40.0000 to 67.9950 MHz.	Defective DECODER SWITCHING circuit consists of IC501, Q502:     Replace the defective components.     Defective B.P.F: Replace the defective components.
15) Low sensitivity between 68.0000 to 107.9950 MHz.	Defective DECODER SWITCHING circuit consists of IC501, Q503:     Replace the defective components.     Defective B.P.F: Replace the defective components.
16) Low sensitivity between 108.0000 to 173.9950 MHz.	1) Defective DECODER SWITCHING circuit consists of IC501, Q504: Replace the defective components. 2) Defective B.P.F: Replace the defective components.
17) Low sensitivity between 174.0000 to 279.9950 MHz.	1) Defective DECODER SWITCHING circuit consists of IC501, Q505: Replace the defective components. 2) Defective B.P.F: Replace the defective components.
18) Low sensitivity between 280.0000 to 520.0000 MHz.	Defective DECODER SWITCHING circuit consists of IC501, Q506:     Replace the defective components.     Defective B.P.F: Replace the defective components.
19) Low sensitivity between 760.0000 to 1300.0000 MHz.	Defective DECODER SWITCHING circuit consists of IC501, Q507:     Replace the defective components.     Defective B.P.F: Replace the defective components.
20) Does not operate between 25.0000 to 220.4950 MHz or 760.0000 to 1052.4950 MHz.	Defective IC503 port P10, IC502, Q315 and/or VCO-1 circuit: Replace the defective components.

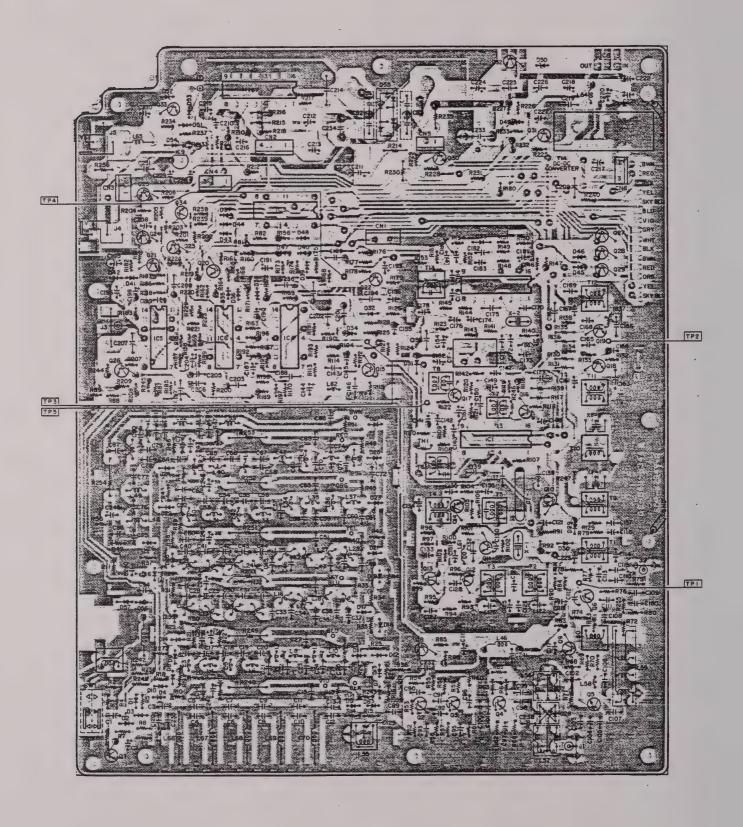
Symptom	Cause/Remedy
21) Does not operate between 220.5000 to 520.0000 MHz or 1052.5000 to 1300.0000 MHz.	Defective IC503 port P11, IC502, Q316 and/or VCO-2 circuit: Replace the defective components.
22) Low sensitivity between 25.0000 to 520.0000 MHz.	Defective IC503 port P66, IC502, Q301 and/or VCO filter-1 circuit: Replace the defective components.
23) Low sensitivity between 760.0000 to 1300.0000 MHz.	Defective IC503 port P67, IC502, Q302 and/or VCO filter-2 circuit: Replace the defective components.
24) All band do not operate but display is OK.	1) Defective PLL circuit IC301, IC302, IC303, IC304 and/or associated circuit: Replace the defective components.  2) Defective IC305, IC306 and/or associated circuit: Replace the defective components.
25) Searches but does not halt on the correct frequency.	1) Defective IC6: Replace. 2) Discriminator Coil T13 (AM and NFM mode or T6 (WFM mode) is out of adjustment: TP4 shall have approx. 3.8 V in normal receiving AM and NFM mode. TP3 shall have approx. 3.8 V in normal receiving WFM mode.

# P.C. BOARDS (TOP & BOTTOM VIEWS)

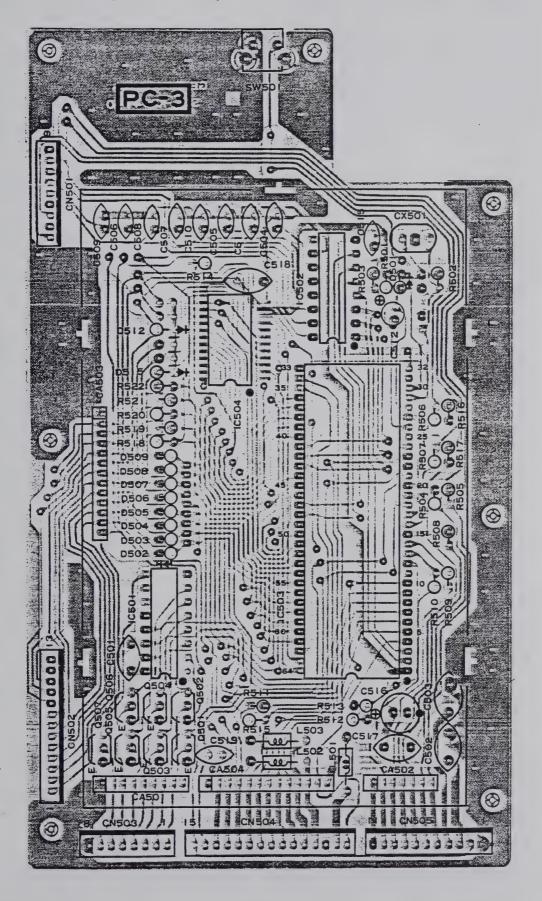
LINEAR P.C. BOARD (TOP VIEW)



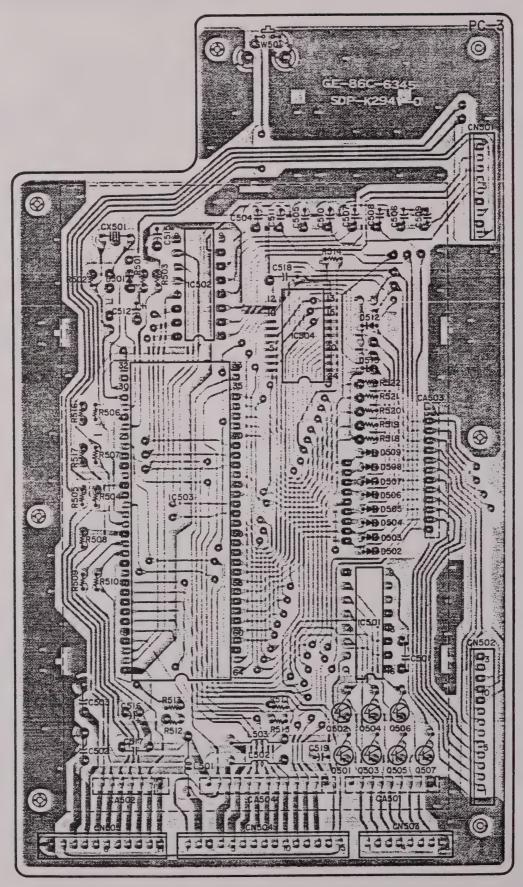
# LINEAR P.C. BOARD (BOTTOM VIEW)



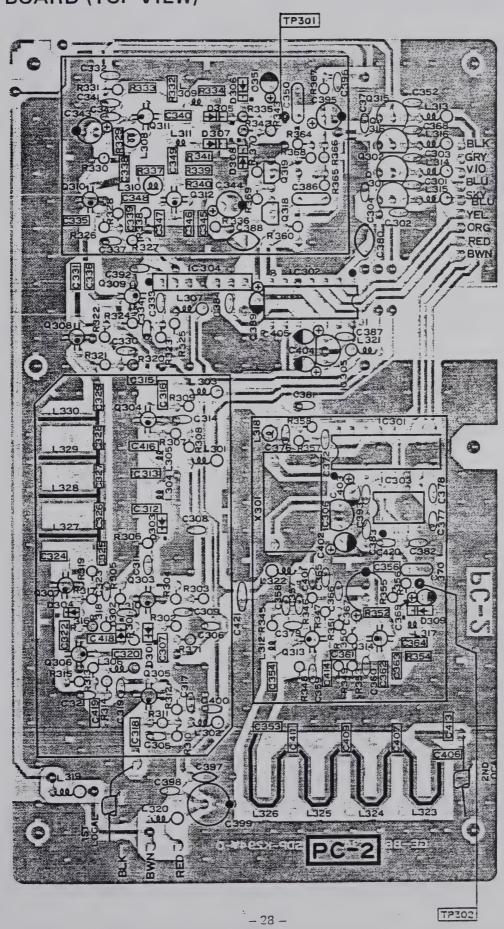
# CPU P.C. BOARD (TOP VIEW)



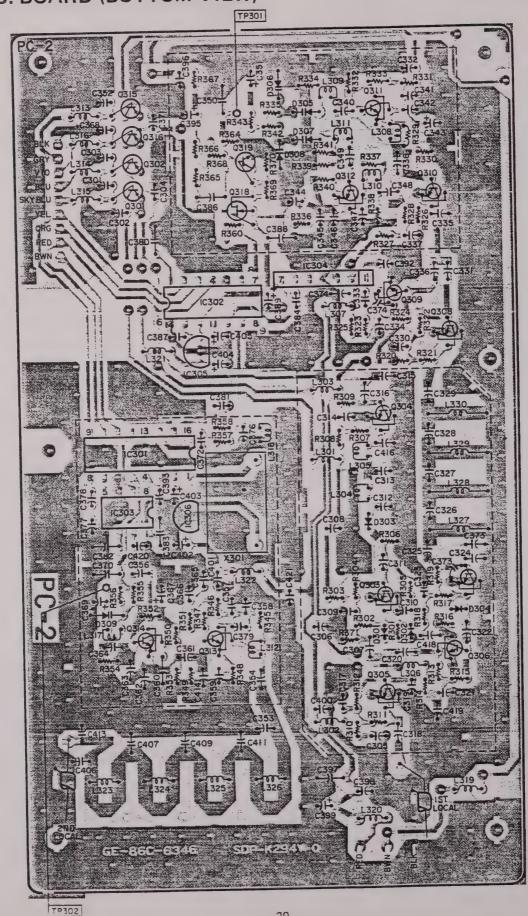
CPU P.C. BOARD (BOTTOM VIEW)



PLL P.C. BOARD (TOP VIEW)

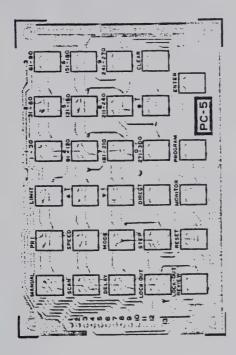


PLL P.C. BOARD (BOTTOM VIEW)

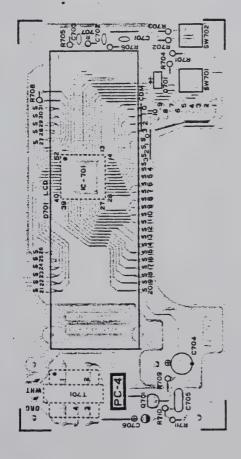


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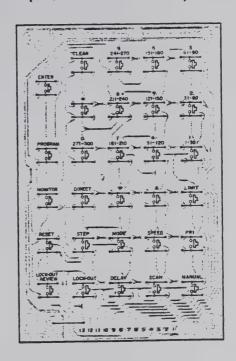
# KEY BOARD P.C. BOARD (TOP VIEW)



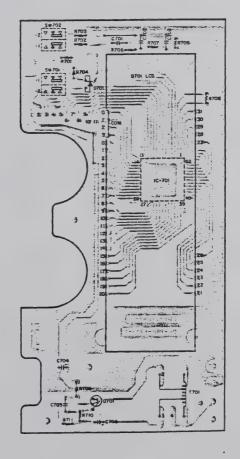
LCD P.C. BOARD (TOP VIEW)



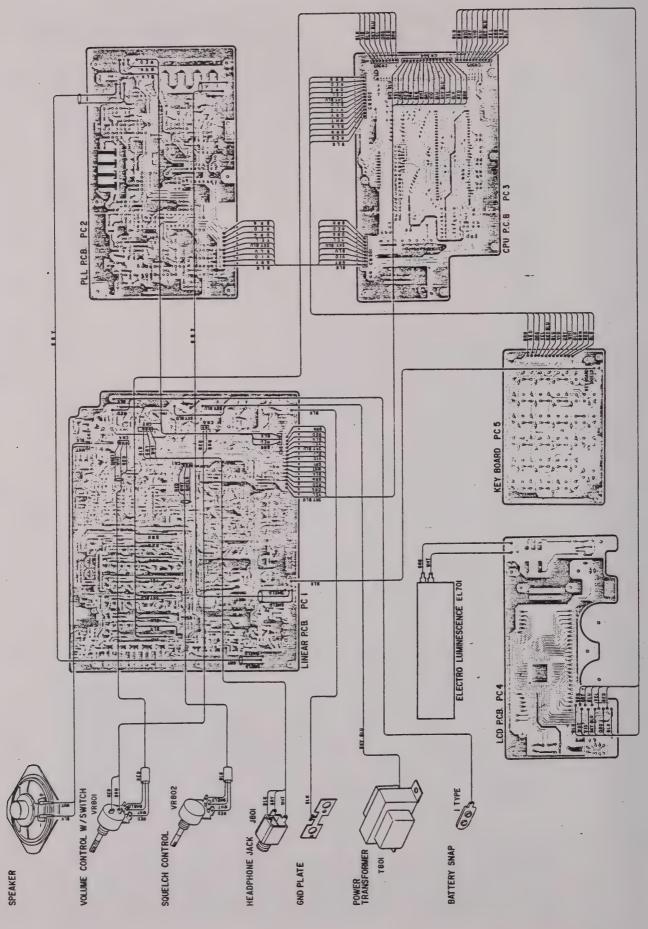
#### (BOTTOM VIEW)



## (BOTTOM VIEW)



# WIRING DIAGRAM



# **ELECTRICAL PARTS LIST**

**PRODUCT SAFETY NOTE:** Products marked with a  $\triangle$  have special characteristics important to safety. Before replacing any of these components, read carefully the product safety notice of this service manual. Don't degrade the safety of the product through improper servicing.

			CAPACITORS		
Ref. No.		Descrip	tion	RS Part Number	MFR's Part Number
C1	Chip	0.001μF	50WV ±10%	CD-102KJBC	T1C3K31P1HC102K
C2	Electrolytic	10μF	16WV ±20%	CC-106MDCA	16MV100SS
C3	Chip	5pF	50WV ±0.5pF	CD-050CJBC	C2C31P1HCG050D
C4	Chip	0.5pF	50WV ±0.25pF	CD-0X5CJBC	C2C31P1HCG0R5C
C5	Chip	2pF	50WV ±0.5pF	CD-020DJBC	C2C31P1HCG020D
C6	Chip	0.5pF	50WV ±0.25pF	CD-0X5CJBC	C2C31P1HCG0R5C
C7	Chip	2pF	50WV ±0.5pF	CD-020DJBC	C2C31P1HCG020D
C8	Chip	0.5pF	50WV ±0.25pF	CD-0X5CJBC	C2C31P1HCG0R5C
C9	Chip	2pF	50WV ±0.5pF	CD-020DJBC	C2C31P1HCG020D
C10	Chip	0.5pF	50WV ±0.25pF	CD-0X5CJBC	C2C31P1HCG0R5C
C10	Chip	2pF	50WV ±0.5pF	CD-020DJBC	C2C31P1HCG020D
C11	Chip	0.5pF	50WV ±0.25pF	CD-0X5CJBC	C2C31P1HCG0R5C
		5pF	50WV ±0.5pF	CD-050CJBC	C2C31P1HCG050D
C13	Chip			CD-102KJBC	C3K31P1HC102K
C14	Chip	0.001μF		CD-102KJBC	C3K31P1HC102K
C15	Chip	0.001μF	50WV ±10%	CD-102KJBC	C2C31P1HCG120J
C16	Chip	12pF	50WV ±5%		
C17	Chip	6pF	50WV ±0.5pF	CD-060DJBC	C2C31P1HCG060D
C18	Chip	6pF	50WV ±0.5pF	CD-060DJBC	C2C31P1HCG060D
C19	Chip	6pF	50WV ±0.5pF	CD-060DJBC	C2C31P1HCG060D
C20	Chip	12pF	50WV ±5%	CD-120JJBC	C2C31P1HCG120J
C21	Chip	5pF	50WV ±0.5pF	CD-050CJBC	C2C31P1HCG050D
C22 .	Chip	12pF	50WV ±5%	CD-120JJBC	C2C31P1HCG120J
C23	Chip	15pF	50WV ±5%	CD-150JJBC	C2C31P1HCG150J
C24	Chip	12pF	50WV ±5%	CD-120JJBC	C2C31P1HCG120J
C25	Chip	10pF	50WV ±0.5pF	CD-100DJBC	C2C31P1HCG100D
C26	Chip	$0.001 \mu$ F	50WV ±10%	CD-120KJBC	C3K31P1HC102K
C27	Chip	0.001µF	50WV ±10%	CD-102KJBC	C3K31P1HC102K
C28	Chip	12pF	50WV ±5%	CD-120JJBC	C2C31P1HCG120J
C29	Chip	6pF	50WV ±0.5pF	CD-060DJBC	C2C31P1HCG060D
C30	Chip	6pF	50WV ±0.5pF	CD-060DJBC	C2C31P1HCG060D
C31	Chip	6pF	50WV ±0.5pF	CD-060DJBC	C2C31P1HCG060D
C32	Chip	12pF	50WV ±5%	CD-102JJBC	C2C31P1HCG120J
C33	Chip	8pF	50WV ±0.5pF	CD-080CJBC	C2C31P1HCG080D
C34	Chip	22pF	50WV ±5%	CD-220JJBC	C2C31P1HCG220J
C35	Chip	22pF	50WV ±5%	CD-220JJBC	C2C31P1HCG220J
C36	Chip	22pF	50WV ±5%	CD-220JJBC	C2C31P1HCG220J
C37	Chip	8pF	50WV ±0.5pF	CD-080CJBC	C2C31P1HCG080D
C38	Chip	0.001μF	50WV ±10%	CD-102KJBC	C3K31P1HC102K
C39	Chip	0.001µF	50WV ±10%	CD-102KJBC	C3K31P1HC102K
C40	Chip	27pF	50WV ±5%	CD-270JJBC	C2C31P1HCG270J
C41	Chip	12pF	50WV ±5%	CD-120JJBC	C2C31P1HCG120J
C42	Chip	12pF	50WV ±5%	CD-120JJBC	C2C31P1HCG120J
C43	Chip	12pF	50WV ±5%	CD-120JJBC	C2C31P1HCG120J
C44	Chip	27pF	50WV ±5%	CD-270JJBC	C2C31P1HCG270J
C45	Chip	22pF	50WV ±5%	CD-220JJBC	C2C31P1HCG220J
C45	Chip	39pF	50WV ±5%	CD-390JJBC	C2C31P1HCG390J
C47	Chip	47pF	50WV ±5%	CD-470JJBC	C2C31P1HCG470J
C47		39pF	50WV ±5%	CD-390JJBC	C2C31P1HCG390J
	Chip		50WV ±5%	CD-220JJBC	C2C31P1HCG220J
C49	Chip	22pF	50WV ±5%	CD-22033BC	C3K31P1HC102K
C50	Chip .	0.001μF	50WV ±10%	CD-102KJBC	C3K31P1HC102K
C51	Chip	0.001μF			C2C31P1HCG390J
C52	Chip	39pF	50WV ±5%	CD-390JJBC	C2C31F1HCG3303

Ref. No.		Description	n	RS Part Number	MFR's Part Number
:53	Chip	18pF	50WV ±5%	CD-180JJBC	C2C31P1HCG180J
54	Chip	18pF	50WV ±5%	CD-180JJBC	C2C31P1HCG180J
		18pF	50WV ±5%	CD-180JJBC	C2C31P1HCG180J
55	Chip	39pF	50WV ±5%	CD-390JJBC	C2C31P1HCG390J
56	Chip		50WV ±5%	CD-330JJBC	C2C31P1HCG330J
57	Chip	33pF		CD-680JJBC	C2C31P1HCG680J
58	Chip	68pF		CD-680JJBC	C2C31P1HCG680J
59	Chip	68pF		CD-680JJBC	C2C31P1HCG680J
60	Chip	68pF	50WV ±5%		C2C31P1HCG220J
61	Chip	22pF	50WV ±5%	CD-220JJBC	
62	Chip	0.001µF	50WV ±10%	CD-102KJBC	C3K31P1HC102K
63	Chip	0.001μF	50WV ±10%	CD-102KJBC	C3K31P1HC102K
64	Chip	68pF	50WV ±5%	CD-680JJBC	C2C31P1HCG680J
65	Chip	27pF	50WV ±5%	CD-270JJBC	C2C31P1HCG270J
66	Chip	27pF	50WV ±5%	CD-270JJBC	C2C31P1HCG270J
67	Chip	68pF	50WV ±5%	CD-680JJBC	C2C31P1HCG680J
68	Chip	47pF	50WV ±5%	CD-470JJBC	C2C31P1HCG470J
69	Chip	100pF	50WV ±5%	CD-101JJBC	C2C31P1HCG101J
70	Chip	100pF	50WV ±5%	CD-101JJBC	C2C31P1HCG101J
70 71	Chip	100pF	50WV ±5%	CD-101JJBC	C2C31P1HCG101J
		27pF	50WV ±5%	CD-270JJBC	C2C31P1HCG270J
72	Chip	0.001μF	50WV ±10%	CD-102KJBC	C3K31P1HC102K
73	Chip			CD-102KJBC	C3K31P1HC102K
74	Chip	0.001μF		CD-221JJBC	C2C31P1HCG221J
75	Chip	220pF	50WV ±5%		C2C31P1HCG470J
76	Chip	47pF	. 50WV ±5%	CD-470JJBC	
77	Chip	68pF	50WV ±5%	CD-680JJBC	C2C31P1HCG680J
78	Chip	68pF	50WV ±5%	CD-680JJBC	C2C31P1HCG680J
79	Chip	150pF	50WV ±5%	CD-151JJBC	C2C31P1HCG151J
80	Chip ·	· 20pF	50WV ±5%	CD-200JJBC	C2C31P1HCG200J
81	Chip	150pF	50WV ±5%	CD-151JJBC	C2C31P1HCG151J
82	Chip	20pF	50W∨ ±5%	CD-200JJBC	C2C31P1HCG200J
83	Chip	150pF	50WV ±5%	CD-151JJBC	C2C31P1HCG151J
84	Chip	20pF	50WV ±5%	CD-200JJBC	C2C31P1HCG200J
85	Chip	47pF	50WV ±5%	CD-470JJBC	C2C31P1HCG470J
86	Chip	0.001µF	50WV ±10%	CD-102KJBC	C3K31P1HC102K
87	Chip	0.001µF	50WV ±10%	CD-102KJBC	C3K31P1HC102K
		0.001µF	50WV ±10%	CD-103KJBC	C3K31P1HC103K
88	Chip	•	50WV ±5%	CD-101JJBC	C2C31P1HCG101J
89	Chip	100pF		CD-100DJBC	C2C31P1HCG100D
90	Chip	10pF	-	CD-101JJBC	C2C31P1HCG101J
91	Chip	100pF	50WV ±5%		C2C31P1HCG040D
92	Chip	4pF	50WV ±0.5pF	CD-040CJBC	C2C31P1HCG100D
93	Chip	10pF	50WV ±0.5pF	CD-100DJBC	
94	Chip	0.001µF	50WV ±10%	CD-102KJBC	C3K31P1HC102K
95	Chip	5pF	50WV ±0.5pF	CD-050CJBC	C2C31P1HCG050D
96	Chip	100pF	50WV ±5%	CD-101JJBC	C2C31P1HCG101J
97	Chip	6pF	50WV ±0.5pF	CD-060DJBC	C2C31P1HCG060D
:98	Chip	2pF	50WV ±0.5pF	CD-020DJBC	C2C31P1HCG020D
99	Chip	100pF	50WV ±5%	CD-101JJBC	C2C31P1HCG101J
100	Chip	100pF	50WV ±5%	CD-101JJBC	C2C31P1HCG101J
2101	Chip	0.001µF	50WV ±10%	CD-102KJBC	C3K31P1HC102K
102	Chip	33pF	50WV ±5%	CD-330JJBC	C2C31P1HCG330J
2102	Chip	0.001μF	50WV ±10%	CD-102KJBC	C3K31P1HC102K
		0.001μF 22pF	50WV ±5%	CD-220JJBC	C2C31P1HCG220J
2104	Chip	•		CD-103KJBC	C3K31P1HC103K
2105	Chip	0.01μF			C2C31P1HCG471J
2106	Chip	470pF	50WV ±5%	CC-471 JJBC	
C107	Chip	33pF	50WV ±5%	CD-330JJBC	C2C31P1HCG330J
2108	Chip	33pF	50WV ±5% 50WV ±5%	CD-330JJBC	C2C31P1HCG330J C2C31P1HCG220J
2109	Chip	22pF	50WV ±5%		

Ref. No.		Description			RS Part Number	MFR's Part Number
C110	Chip	10pF	50WV	±0.5pF	CD-100DJBC	C2C31P1HCG100D
C111	Chip	0.001µF	50WV	±10%	CD-102KJBC	C3K31P1HC102K
C112	Chip	5pF ~	50WV	±0.5pF	CC-050CJBC	C2C31P1HCG050D
	Chip	18pF	50WV	±5%	CD-180JJBC	C2C31P1HCG180J
C113		0.001µF	50WV	±10%	CD-102KJBC	C3K31P1HC102K
C114	Chip		50WV	±5%	CC-330JJBC	C2C31P1HCG330J
C115	Chip	33pF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C116	Ceramic	0.001μF		±10%	CC-102KJBC	HE50SJYB102K
C117	Ceramic	0.001μF	50WV			16MV100HA
C118	Electrolytic	10μF	16WV	±20%	CC-106MDCA	16MV330HA
C119	Electrolytic	33µF	16WV	±20%	CC-336MDCA	C2C31P1HCG020D
C120	Chip	2pF	50WV	±0.5pF	CD-020DJBC	
C121	Ceramic	0.001μF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C122	Ceramic	10pF	50WV	±0.5pF	CC-100DJBC	HE40SJSL100D
C123	Ceramic	10pF	50WV	±10%	CC-100DJBC	HE40SJUJ100K
C124	Ceramic	1pF	50WV	±0.5pF	CC-010CJBC	HE40SJCH010D
C125	Ceramic	10pF	50WV	±10%	CC-100DJBC	HE40SJUJ100K
C126	Ceramic	0.001µF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C127	Ceramic	0.001µF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C128	Ceramic	10pF	50WV	±0.5pF	CC-100DJBC	HE40SJSL100D
C129	Chip	2pF	50WV	±0.5pF	CC-020DJBC	C2C31P1HCG020D
C130	Ceramic	22pF	50WV	±10%	CC-220KJBC	HE40SJSL220K
C130	Ceramic	56pF	50WV	±10%	CC-560JJBC	HE40SJSL560K
C131	Ceramic	0.001μF	50WV	±10%	CC-102KJBC	HE50SJYB102K
		0.001µF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C133	Ceramic		50WV	±10%	CC-102KJBC	HE50SJYB102K
C134	Ceramic	0.001μF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C135	Ceramic	0.001μF		±10%	CC-102KJBC	HE50SJYB102K
C136	Ceramic	0.001μF	50WV	±10%	CC-473KJBM	AK1-UU473K50
C137	Mylar*	0.047μF	50WV			AK1-UU473K50
C138	Mylar	0.047μF	50WV	±10%	CC-473KJBM	AK1-UU104K50
C139	Mylar	0.1μF	50WV	±10%	CC-104KJBM	HE40SJYB471K
C140	Ceramic	470pF	50WV	±10%	CC-471KJBC	HE40SJYB101K
C141	Ceramic	100pF	50WV	±10%	CC-101KJBC	l .
C142		470pF	50WV	±10%	CC-471KJBC	HE40SJYB471K
C143	Mylar	0.0022μF	50WV	±10%	CC-222KJBM	AK1-UU222K50
C144	Electrolytic	10μF	16WV	±20%	CC-106MDCA	16MV100HA
C145	Ceramic	47pF	50WV	±10%	CC-470KJBC	HE40SJSL470K
C146	Mylar	0.047μF	50WV	±10%	CC-473KJBM	AK1-UU473K50
C147	Ceramic	470pF	50WV	±10%	CC-471KJBC	HE40SJYB471K
C148	Electrolytic	1μF	50WV	±20%	CC-105MJBA	50MV010HA
C149	Electrolytic	10μF	16WV	±20%	CC-106MDCA	16MV100HA
C150	Ceramic	0.01µF	50WV	+80%-20%	CC-103ZJBC	HE70SJYF103Z
C151	Electrolytic	1μF	50WV	±20%	CC-105MJBA	50MV010HA
C152	Electrolytic	10μF	16WV	±20%	CC-106MDCA	16MV100HA
C153	Mylar	0.056µF	50WV	±10%	CC-563KJBM	AK1-UU563K50
C154	Electrolytic	22μF	16WV	±20%	CC-226MDCA	16MV220HA
C155	Electrolytic	1μF	50WV	±20%	CC-105MJBA	50MV010HA
C156	Electrolytic	1μF	50WV	±20%	CC-105MJBA	50MV010HA
C150	Ceramic	33pF	50WV	±10%	CC-330KJBC	HE40SJSL330K
	Not used	00p1	20111			
C158	Not used Not used					
C159						
C160	Not used	0.0015	50WV	±10%	CC-102KJBC	HE50SJYB102K
C161	Ceramic	0.001μF	50WV	+80%-20%	CC-102K3BC	HE70SJYF103Z
C162	Ceramic	0.01μF			CC-103ZJBC	HE70SJYF103Z
C163	Ceramic	0.01μF	50WV	+80%-20%	CC-10323BC	HE50SJYB102K
C164	Ceramic	0.001μF	50WV	±10%	1	HE50SJYB102K
C165	Ceramic	0.001μF	50WV	±10%	CC-102KJBC	HE70SJYF103Z
C166	Ceramic	0.01µF	50WV	+80%-20%	CC-103ZJBC	112/03/11/1002

<sup>\*</sup> Mylar is a registered trademark of E.I. Du Pont de Nemours and Company.

Ref. No.		Description	1		RS Part Number	MFR's Part Number
C167	Ceramic	0.001μF	50WV	±10%	CC-102KJBC	HE50SJYB102K
	Ceramic	10pF	50WV	±10%	CC-100DJBC	HE40SJUJ100K
2168		0.001μF	50WV	±10% .	CC-102KJBC	HE50SJYB102K
2169	Ceramic	33pF	50WV	±10%	CC-330KJBC	HE40SJSL330K
2170	Ceramic		50WV	±0.5pF	CC-100DJBC	HE40SJSL100D
C171	Ceramic	10pF	50WV	±10%	CC-100D3BC	HE50SJYB102K
C172	Ceramic	0.001μF			CC-100DJBC	HE40SJSL100D
C173	Ceramic	10pF	50WV	±0.5pF		DN1VR47M1S
C174	Tantalum	0.47μF	35WV	±20%	CC-474MGBT	HE13SJYF473Z
C175	Ceramic	0.047µF	50WV	+80%-20%	CC-473ZJBC	DN1VOR1M1S
C176	Tantalum	0.1μF	35WV	±20%	CC-104MGBT	
C177	Ceramic	0.01µF	50WV	+80%-20%	CC-103ZJBC	HE70SJYF103Z
C178	Electrolytic	220µF	16WV	±20%	CC-227MDCA	16MV221HA
C179	Ceramic	10pF	50WV	±0.5pF	CC-100DJBC	HE40SJSL100D
	Chip	5pF	50WV	±0.5pF	CD-050DJBC	C2C31P1HCG050D
C180	Tantalum	0.22μF	35WV	±20%	CC-224MGBT	DN.1VR22M1S
C181			50WV	±10%	CC-103KJBM	AK1-UU103K50
C182	Mylar	0.01μF		±0.5pF	CC-050CJBC	HE40SJSL050D
C183	Ceramic	5pF	50WV		CC-682KJBM	AK1-UU682K50
C184	Mylar	0.0068μF	50WV	±10%	CC-471KJBC	HE40SJYB471K
C185	Ceramic	470pF	50WV	±10%		
C186	Ceramic	470pF	50WV	±10%	CC-471KJBC	HE40SJYB471K
C187	Tantalum	0.1μF	35WV	±20%	CC-104MGBT	DN1V0R1M1S
C188	Ceramic	0.01µF	50WV	+80%-20%	CC-103ZJBC	HE70SJYF103Z
C189	Mylar	0.047µF	50WV	±10%	CC-473KJBM	AK1-UU473K50
	Electrolytic	0.1μF	50WV	±20%	CC-104MJBA	50MVR10HA
C190		1μF	50WV	±20%	CC-105MJBA	50MV010HA
C191	Electrolytic	0.056μF	50WV	±10%	CC-563KJBM	AK1-UU563K50
C192	Mylar		50WV	±20%	CC-104MJBA	50MVR10HA
.C193	Electrolytic	0.1μF		±10%	CC-563KJBM	AK1-UU563K50
C194	Mylar	0.056μF	50WV		CC-475MFBA	25MV4R7HA
C195	Electrolytic	4.7μF	25WV	±20%	1	DN1V0R1M1S
C196	Tantalum	0.1μF	35WV	±20%	CC-104MGBT	
C197	Ceramic	0.01μF	50WV	+80%-20%	CC-103ZJBC	HE70SJYF103Z
C198	Electrolytic	1μF	50WV	±20%	CC-105MJBA	50MV010HA
C199	Ceramic	330pF	50WV	±10%	CC-331KJBC	HE40SJYB331K
C200	Mylar	0.082µF	50WV	±10%	CC-823KJBM	AK1-UU823K50
	· ·	0.056µF	50WV	±10%	CC-563KJBM	AK1-UU563K50
C201	Mylar	0.036μF 0.0047μF	50WV	±10%	CC-472KJBM	AK1-UU472K50
C202	Mylar		50WV	±10%	CC-473KJBM	AK1-UU473K50
C203	Mylar	0.047μF			CC-152KJBC	HE60SJYB152K
C204	Ceramic	0.0015μF	50WV	±10%		AK1-UU682K50
C205	Mylar	0.0068µF	50WV	±10%	CC-682KJBM	AK1-UU682K50
C206	Mylar	0.0068µF	50WV	±10%	CC-682KJBM	
C207	Mylar	0.047µF	50WV	±10%	CC-473KJBM	AK1-UU473K50
C208	Electrolytic	2.2µF	50WV	±20%	CC-225MJBA	50MV2R2HA
C209	Ceramic	0.01µF	50WV	+80%20%	CC-103ZJBC	HE70SJYF103Z
C210	Electrolytic	1μF	50WV	±20%	CC-105MJBA	50MV010SS
C210	Electrooytic	1000μF	25WV	±20%	CC-108MFBA	25MV102HA
		47μF	16WV	±20%	CC-476MDCA	16MV470SS
C212	Electrolytic		16WV	±20%	CC-107MDCA	16MV101HA
C213	Electrolytic	100μF		±10%	CC-224KJBM	AK1-UU224K50
C214	Mylar	0.22µF	50WV		CC-106MDCA	16MV100SS
C215	Electrolytic	10μF	16WV	±20%		50MV2R2SS
C216	Electrolytic	2.2µF	50WV	±20%	CC-225MJBA	
C217	Electrolytic	10μF	50WV	±20%	CC-106MJBA	50MV100HA
C218	Electrolytic	33μF	16WV	±20%	CC-336MDCA	16MV330HA
C219	Ceramic	0.047µF	50WV	+80%-20%	CC-473ZJBC	HE13SJYF473Z
C219	Electrolytic	33μF	16WV	±20%	CC-336MDCA	16MV330HA
C220	Tantalum	0.1μF	35WV	±20%	CC-104MGBT	DN1VOR1M1S
	Tantalum	0.1μF 0.33μF	35WV	±20%	CC-334MGBT	DN1VR33M1S
C222		0.33μF 0.001μF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C223	Ceramic	0.00 με	30 44 4	_10/0	1	

Ref. No.		Description	1		RS Part Number	MFR's Part Number
	5	•		.000/	00.00711001	
C224	Electrolytic	220µF	16WV	±20%	CC-227MDCA	16MV221HA
C225	Mylar	0.033μF	50WV	±10%	CC-333KJBM	AK1-UU333K50
C226	Electrolytic	220μF	16WV	±20%	CC-227MDCA	16MV221HA
C227	Electrolytic	100μF	16WV	±20%	CC-107MDCA	16MV101HA
C228	Electrolytic	0.1μF	50WV	±20%	CC-104MJBA	50MVR10SS
C229	Electrolytic	0.1μF	50WV	±20%	CC-104MJBA	50MVR10SS
C230	Electrolytic	10μF	16WV	±20%	CC-106MDCA	16MV100HA
C231	Ceramic	0.01μF	50WV	+80%-20%	CC-103ZJBC	HE70SJYF103Z
C232	Not used	·				
<b>∆C233</b>	Electrolytic	2200μF	25WV	±20%	CC-228MFBA	25MV222HA
C234	Electrolytic	470µF	25WV	±20%	CC-477MFBA	25MV471HA
C235	Chip	2pF	50WV	±0.5pF	CD-020DJBC	C2C31P1HCG020D
C236	Mylar	0.022μF	50WV	±10%	CC-273KJBM	AK1-UU223K50
C237	,		50WV	±10%		C3K31P1HC102K
	Chip	0.001μF			CD-102KJBC	
C238	Chip	5pF	50WV	±0.5pF	CD-050CJBC	C2C31P1HCG050D
C239	Not used					
C240	Electrolytic	33µF	16WV	±20%	CC-336MDCA	16MV330HA
C241	Chip	0.001μF	50WV	±10%	CD-102KJBC	C3K31P1HC102K
C242	Electrolytic	1μF	50WV	±20%	CC-105MJBA	50MV010HA
C243	Electrolytic	1μF	50WV	±20%	CC-105MJBA	50MV010HA
C244	Electrolytic	1μF	50WV	±20%	CC-105MJBA	50MV010HA
C245	Electrolytic	1μF	50WV	±20%	CC-105MJBA	50MV010HA
C246	Electrolytic	1μF	50WV	±20%	CC-105MJBA	50MV010HA
C247	Electrolytic	1μF	50WV	±20%	CC-105MJBA	50MV010HA
C248	Electrolytic	1μF	50WV	±20%	CC-105MJBA	50MV010HA
C246	Electrolytic	ιμε	30 77 7	12070	CC-105IVI3DA	301010010174
C301 .	Ceramic	0.001µF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C302	Ceramic	0.001µF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C303	Ceramic	0.001µF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C304	Ceramic	0.001μF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C305	Ceramic	0.001µF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C306	Ceramic	0.001µF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C307	€hip	2pF	50WV	±0.5pF	CD-020DJBC	C2C31P1HCG020D
C308	Ceramic	0.001μF	50WV	±10%		HE50SJYB102K
	Ceramic		50WV	±10%	CC-102KJBC	HE50SJYB102K
C309		0.001μF		±10%	CC-102KJBC	HE50SJYB102K
C310	Ceramic	0.001μF	50WV		CC-102KJBC	
C311	Ceramic	5pF	50WV	±0.5pF	CC-050CJBC	HE40SJSL050D
C312	Chip	3pF	50WV	±0.5pF	CD-030CJBC	C2C31P1HCG030D
C313	Chip	5pF	50WV	±0.5pF	CD-050CJBC ·	C2C31P1HCG050D
C314	Ceramic	0.001μF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C315	Chip	4pF	50WV	±0.5pF	CD-040CJBC	C2C31P1HCG040D
C316	Chip	10pF	50WV	±0.5pF	CD-100DJBC	. C2C37P1HCG100D
C317	Ceramic	0.001µF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C318	Chip	5pF	50WV	±0.5pF	CD-050CJBC	C2C31P1HCG050D
C319	Ceramic	1pF	50WV	±0.5pF	CC-010CJBC	HE40SJSL010D
C320	Chip	5pF	50WV	±0.5pF	CD-050CJBC	C2C31P1HCG050D
C321	Ceramic	0.001μF	50WV	±10%	CC-102KJBC	HE50SJYB102K
		1pF	50WV	±0.25pF	CD-010CJBC	C2C31P1HCG010C
C322	Chip			±0.25pF ±10%	CC-102KJBC	HE50SJYB102K
C323	Ceramic	0.001μF	50WV			C2C31P1HCG0R5C
C324	Chip	0.5pF	50WV	±0.25pF	CD-0X5CJBC	<del></del>
C325 ·	Chip	2pF	50WV	±0.5pF	CD-020DJBC	C2C31P1HCG020D
C326	Chip	1pF	50WV	±0.25pF	CD-010CJBC	C2C31P1HCG010C
C327	Chip	1pF	50WV	±0.25pF	CD-010CJBC	C2C31P1HCG010C
C328	Chip	1pF	50WV	±0.25pF	CD-010CJBC	C2C31P1HCG010C
C329	Chip	2pF	50WV	±0.5pF	CD-020DJBC	C2C31P1HCG020D
C330	Ceramic	0.001μF	50WV	±10%	CC-102KJBC	HE50SJYB102K
	i e			±0.5pF	CD OSOCIEC	C2C31P1HCG030D
C331	Chip	3pF	50WV	±0.5pr	CD-030CJBC	020311 111000000

Ref. No.		Description			RS Part Number	MFR's Part Number
C333	Ceramic	5pF	50WV	±0.5pF	CC-050CJBC	HE40SJSL050D
C334	Ceramic	0.001µF	50WV	±10%	CC-102KJBC	HE50SJYB102K
		2pF	50WV	±0.5pF	CD-020DJBC	C2C31P1HCG020D
335	Chip		50WV	±0.5pF	CD-020DJBC	C2C31P1HCG020D
336	Chip	2pF				HE50SJYB102K
337	Ceramic	0.001µF	50WV	±10%	CC-102KJBC	
338	Chip	5pF	50WV	±0.5pF	CD-050CJBC	C2C31P1HCG050D
339	Not used					
2340	Chip	22pF	50WV	±0.5pF	CD-220DJBC	C2C31P1HCG220D
341	Ceramic	22pF	50WV	±10%	CC-220KJBC	HE40SJSL220K
342	Ceramic	0.001µF	50WV	±10%	CC-102KJBC	HE50SJYB102K
			16WV	±20%	CC-106MDCA	16MV100HA
2343	Electrolytic	10µF				16MV100HA
2344	Electrolytic	10µF	16WV	±20%	CC-106MDCA	
C345	Chip	0.001µF	50WV	±10%	CD-102KJBC	C3K31P1HC102K
C346	Chip	22pF	50WV	±0.5pF	CD-220DJBC	C2C31P1HCG220D
C347	Chip	2pF	50WV	±0.5pF	CD-020DJBC	C2Ç31P1HCG020D
C348	Chip	5pF	50WV	±0.5pF	CD-050CJBC	C2C31P1HCG050D
	Chip	10pF	50WV	±0.5pF	CD-100DJBC	C2C31P1HCG100D
C349	•		50WV	±10%	CC-473KJBM	AK1-UU473K50
C350	Mylar	0.047μF			CC-104MGBT	DN1V0R1M1S
C351	Tantalum	0.1μF	35WV	±20%		
C352	Ceramic	0.001µF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C353	Chip	4pF	50WV	±0.5pF	CD-040CJBC	C2C31P1HCG040D
C354	Chip	10pF	50WV	±0.5pF	CD-100DJBC	C2C31P1HCG100D
C355	Not used			•		
C356	Chip	0.5pF	50WV	±0.25pF	CD-0X5CJBC	C2C31P1HCG0R5C
	· '		50WV	±10%	CC-330KJBC	HE40SJSL330K
C357	Ceramic	33pF			CC-102KJBC	HE50SJYB102K
C358	Ceramic	0.001µF	50WV	±10%		
C359	Ceramic	0.001µF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C360	Ceramic	100pF	50WV	±10%	CC-101KJBC	HE50SJSL101K
C361	Chip	2pF	50WV	±0.5pF	CD-020DJBC	C2C31P1HCG020D
C362	Chip	6pF	50WV	±0.5pF	CD-060DJBC	C2C31P1HCG060D
C363	Chip	10pF	50WV	±0.5pF	CD-100DJBC	C2C31P1HCG100D
		10pF	50WV	±0.5pF	CD-100DJBC	C2C31P1HCG100D
C364	Chip			•	CC-330KJBC	HE40SJSL330K
C365	Ceramic	33pF	50WV	±10%		
C366	Ceramic	0.001μF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C367	Electrolytic	220μF	16WV	±20%	CC-227MDCA	16MV221HA
C368	Ceramic	0.001μF	50WV	±10%	CD-102KJBC	HE50SJYB102K
C369	Tantalum	0.47µF	35WV	±20%	CC-474MGBT	DN1VR47M1S
C370	Mylar	0.047µF	50WV	±10%	CC-473KJBM	AK1-UU473K50
	1 '	0.001μF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C371	Ceramic			±10%	CC-102KJBC	HE50SJYB102K
C372	Ceramic	0.001μF	50WV		1	
C373	Chip	1pF	50WV	±0.25pF	CD-010CJBC	C2C31P1HCG010C
C374	Chip	5pF	50WV	±0.5pF	CD-050CJBC	C2C31P1HCG050D
C375	Not used					
C376	Ceramic	22pF	50WV	±10%	CC-220KJBC	HE40SJSL220K
C377	Ceramic	5pF	50WV	±0.5pF	CC-050CJBC	HE40SJSL050D
C378	Ceramic	0.001µF	50WV	±10%	CC-102KJBC	HE50SJYB102K
	1	•	50WV	±10%	CC-101KJBC	HE50SJSL101K
C379	Ceramic	100pF			CC-107K3BC	HE70SJYF103Z
C380	Ceramic	0.01μF	50WV	+80%-20%		
C381	Ceramic	0.001µF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C382	Ceramic	0.0022µF	50WV	±10%	CC-222KJBC	HE60SJYB222K
C383	Ceramic	0.01µF	50WV	+80%-20%	CC-103ZJBC	HE70SJYF103Z
C384	Ceramic	0.001µF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C385	Not used	0.00141	3011 4	_,0,0		
		0.0475	EOM/	+100/	CC-473KJBM	AK1-UU473K50
C386	Mylar	0.047µF	50WV	±10%	CC-102KJBC	
C387	Ceramic	0.001μF	50WV	±10%	·	HE50SJYB102K
	Ceramic	0.01μF	50WV	+80%-20%	CC-103ZJBC	HE70SJYF103Z
C388	Ceramic	0.1µF	35WV	±20%	CC-104MGBT	DN1V0R1M1S

Ref. No.		Description			RS Part Number	MFR's Part Number
C390	Not used			*		
C391	Not used	• -				
C392	Ceramic	0.001µF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C393	Ceramic	0.001µF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C394	Not used					
C395	Electrolytic	10µF	50WV	±20%	CC-106MJBA	50MV100HA
2396 2396	Ceramic	0.001µF	50WV	±10%	CC-102KJBC	HE50SJYB102K
	Ceramic	0.001µF	50WV	+80%-20%	CC-103ZJBC	HE70SJYF103Z
2397				±10%	CC-10323BC	HE50SJYB102K
398	Ceramic	0.001µF	50WV		1	
399	Electrolytic	220µF	16WV	±20%	CC-227MDCA	16MV221HA
2400	Ceramic	0.001µF	50WV	±10%	CC-102KJBC	HE50SJYB102K
2401	Ceramic	0.001µF	50WV	±10%	CC-102KJBC	HE50SJYB102K
2402	Tantalum	0.33µF	35WV	±20%	CC-334MGBT	DN1VR33M1S
2403	Tantalum	0.1µF	35WV	±20%	CC-104MGBT	DN1V0R1M1S
C404	Tantalum	0.33μF	35WV	±20%	CC-334MGBT	DN1VR33M1S
C405	Tantalum	0.1μF	35WV	±20%	CC-104MGBT	DN1V0R1M1S
		4pF	50WV	±0.5pF	CD-040CJBC	C2C31P1HCG040D
2406	Chip			•	CD-030CJBC	C2C31P1HCG030D
C407	Chip	3pF	50WV	±0.5pF	CD-030CDC	CZCSTPTACGOSOD
C408	Not used		<u> </u>		00 0000 100	
C409	Chip	8pF	50WV	±0.5pF	CD-080DJBC	C2C31P1HCG080D
C410	Not used					
C411	Chip	3pF	50WV	±0.5pF	CD-030CJBC	C2C31P1HCG030D
C412	Not used					
C413	Chip	1pF	50WV	±0.25pF	CD-010CJBC	C2C31P1HCG010C
C414	Chip	1pF	50WV	±0.25pF	CD-010CJBC	C2C31P1HCG010C
C415	Not used	ιρ.				
C416	Chip	3pF	50WV	±0.5pF	CD-030CJBC	C2C31P1HCG030D
	1 '	Spr	3011	20.5pi	02 000000	020011 111000000
C417	Not used	4.5	E014/1/	+0 5-5	CD-040CJBC	C2C31P1HCG040D
C418	Chip	4pF	50WV	±0.5pF	CD-040CJBC	C2C31P1HCG040D
C419	Chip	4pF	50WV	±0.5pF		
C420	Ceramic	5pF	50WV	±0.5pF	CC-050CJBC	HE40SJSL050D
C421	Ceramic	0.001μF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C501	Ceramic	0.01µF	50WV	+80%-20%	CC-103ZJBC	HE70SJYF103Z
C501	1	0.01μF	50WV	+80%-20%	CC-103ZJBC	HE70SJYF103Z
	Ceramic		50WV	+80%-20%	CC-103ZJBC	HE70SJYF103Z
C503	Ceramic	0.01μF				HE40SJYB101K
C504	Ceramic	100pF	50WV	±10%	CC-101KJBC	3
C505	Ceramic	100pF	50WV	±10%	CC-101KJBC	HE40SJYB101K
C506	Ceramic	100pF	50WV	±10%	CC-101KJBC	HE40SJYB101K
C507	Ceramic	100pF	50WV	±10%	CC-101KJBC	HE40SJYB101K
C508	Ceramic	0.001μF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C509	Ceramic	0.001μF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C510	Ceramic	0.001μF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C511	Ceramic	0.001µF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C511		4.7μF	25WV	±20%	CC-475MFBA	25MV4R7HA
	Electrolytic	4.7μΓ	23444	-20/0	004,0111.07	
C513	Not used					
C514	Not used			1.4051	00 (00)(100	LIEEOC IVE 100K
C515	Ceramic	0.001μF	50WV	±10%	CC-102KJBC	HE50SJYB102K
C516	Electrolytic	10μF	16WV	±20%	CC-106MDCA	16MV100HA
C517	Ceramic	0.01µF	50WV	+80%-20%	CC-103ZJBC	HE70SJYF103Z
C518	Ceramic	0.01µF	50WV	+80%-20%	CC-103ZJBC	HE70SJYF103Z
C519	Ceramic	100pF	50WV	±10%	CC-101KJBC	HE40SJYB101K
C701	Ceramic	0.01µF	50WV	+80%-20%	CC-103ZJBC	HE70SJYF103Z
C701		0.01μF	50WV	+80%-20%	CC-103ZJBC	HE70SJYF103Z
	Ceramic			+80%-20%	CC-103ZJBC	HE70SJYF103Z
C703	Ceramic	0.01μF	50WV			16MV101SS
C704	Electrolytic	100μF	16WV	±20%	CC-107MDCA	AK1-UU473K50
C705	Mylar	0.047µF	50WV	±10%	CC-473KJBM	AK1-004/3K30

	CAPACITOR ARRAY								
Ref. No.	Descript	ion	RS Part Number	MFR's Part Number					
CA501 CA502 CA503 CA504 CB1 CB2	0.001µFx8 100pFx6 100pFx12 100pFx12 0.01µFx2 0.01µFx2	50WV +80%-20% 50WV ±20% 50WV ±20% 50WV ±20% 250V +80%-20% 250V +80%-20%	C-1814 C-1815 C-1815 CA-1816 CA-1816	EXF-P8102ZF EXF-P6101MF EXF-P12101MF EXF-P12101MF EXR-FS203ZS EXR-FS203ZS					

DIODE								
Ref. No.	Description		RS Part Number	MFR's Part Number				
D1	1SS241	(Silicon)	DX-2771	1SS241				
D2	155241	(Silicon)	DX-2771	1SS241				
D3	1SS241	(Silicon)	DX-2771	1SS241				
D4	1SS241	(Silicon)	DX-2771	1SS241				
D5	1SS241	(Silicon)	DX-2771	1SS241				
D6	1SS241	(Silicon)	DX-2771	1SS241				
D7	1SS241	(Silicon)	DX-2771	1SS241				
D8	1SS241	(Silicon)	DX-2771	1SS241				
D9	1SS241	(Silicon)	DX-2771	1SS241				
D10	1SS241	(Silicon)	DX-2771	1SS241				
D11	1SS241	(Silicon)	DX-2771	1SS241				
D12	1SS241	(Silicon)	DX-2771	1SS241				
D13	1SS241	(Silicon)	DX-2771	1SS241				
D14	1SS241	(Silicon)	DX-2771	1SS241				
D15	1SS241	(Silicon)	DX-2771	1SS241				
D16	1SS241	(Silicon)	DX-2771	1SS241				
D17	1SS241	(Silicon)	DX-2771	1SS241				
D18	1SS241	(Silicon)	DX-2771	1SS241				
D19	1SS241	(Silicon)	DX-2771	1SS241				
D20 ·	1SS241	(Silicon)	DX-2771	1SS241				
D21	1SS241	(Silicon)	DX-2771	1\$S241				
D22	1SS241	(Silicon)	DX-2771	1SS241				
D23	1SS241	(Silicon)	DX-2771	1SS241				
D24	1SS241	(Silicon)	DX-2771	1SS241				
D25	1SS241	(Silicon)	DX-2771	1SS241				
D26	1SS241	(Silicon)	DX-2771	1SS241				
D27	1SS241	(Silicon)	DX-2771	1SS241				
D28	ND487C1-3R	(Silicon)	DX-2773	ND487C1-3R				
D29	1SS241	(Silicon)	DX-2771	1SS241				
D30 ·	1SS241	(Silicon)	DX-2771	1SS241				
D31	OA90-R	(Germanium)	DX-2772	OA90-R				
D32	OA90-R	(Germanium)	DX-2772	OA90-R				
D33	OA90-R	(Germanium)	DX-2772	OA90-R				
D34	1S2076A	(Silicon)	DX-1056	1S2076A				
D35	1S2076A	(Silicon)	DX-1056	1S2076A				
D36	1S2076A	(Silicon)	DX-1056	1S2076A				

Ref. No.		Description		RS Part Number	MFR's Part Number
D37		1S2076A	(Silicon)	DX-1056	1S2076A
D38		1S2076A	(Silicon)	DX-1056	1S2076A
D39		1S2076A	(Silicon)	DX-1056	1S2076A
D40		1S2076A	(Silicon)	DX-1056	1S2076A
D41		1S2076A	(Silicon)	DX-1056	1S2076A
D42		1S2076A	(Silicon)	DX-1056	1S2076A
D43		1S2076A	(Silicon)	DX-1056	1S2076A
D44		1S2076A	(Silicon)	DX-1056	1S2076A
D45		1S2076A	(Silicon)	DX-1056	1S2076A
D46		1S2076A	(Silicon)	DX-1056	1S2076A
D47		1S2076A	(Silicon)	DX-1056	1S2076A
D48		1S2076A	(Silicon)	DX-1056	1S2076A
D49	Zener	HZ6B2L	(Silicon)	DX-2774	HZ6B2L
D50	Zener	HZ9B2L	(Silicon)	DX-2009	HZ9B2L
D51		1S2076A	(Silicon)	DX-1056	1S2076A
D52	Zener	HZ11B2L	(Silicon)	DX-2687	. HZ11B2L
D53	20.10.	1S2076A	(Silicon)	DX-1056	1S2076A
D54		SR1K-2	(Silicon)	DX-0475	SR1K-2
<b>≜</b> D55	Rectifier	184841	(Silicon)	DX-2513	184841
D56	1100011101	1S1585	(Silicon)	DX-0636	1S1585
D57		1S1585	(Silicon)	DX-0636	1S1585
D301		1SS241	(Silicon)	DX-2771	1SS241
D302		1SS241	(Silicon)	DX:2771	1SS241
D303		1SS241	(Silicon)	DX-2771	1SS241
D304		1SS241	(Silicon)	DX-2771	1SS241
D305	Varactor	1T25(5/6/7)	(Silicon)	DX-2775	1T25(5/6/7)
D306	Varactor	1T25(5/6/7)	(Silicon)	DX-2775	1T25(5/6/7)
D307	Varactor	1T25(5/6/7)	(Silicon)	DX-2775	1T25(5/6/7)
D308	Varactor	1T25(5/6/7)	(Silicon)	DX-2775	1T25(5/6/7)
D309	Varactor	1SV89	(Silicon)	DX-0139	1SV89
D501		1S2076A	(Silicon)	DX-1056	1S2076A
D502		1S2076A	(Silicon)	DX-1056	1S2076A
D503		1S2076A	(Silicon)	DX-1056	1S2076A
D504		1S2076A	(Silicon)	DX-1056	1S2076A
D505		1S2076A	(Silicon)	DX-1056	1S2076A
D506		1S2076A	(Silicon)	DX-1056	1S2076A
D507		1S2076A	(Silicon)	DX-1056	1S2076A
D508		1S2076A	(Silicon)	DX-1056	1S2076A
D509		1S2076A	(Silicon)	DX-1056	1S2076A
D510	Not used				
D511	Not used				C.
D512 <sup>†</sup>	Not used				
D513	Not used				
D513	Not used				,
D515	1401 4364	1S2076A	(Silicon)	DX-1056	1S2076A
D701	LED	TLR-208	(Cilicon)	L-0066	TLR-208
5,01	LED	111-200		2-0000	, 211 200

<sup>†</sup> See Appendix (page 54) for ITI models.

	INTEGRATED CIRCUITS								
Ref. No.		Description		RS Part Number	MFR's Part Number				
IC1	KB4419A	(IF Amp/Det)	(Bipolar) Linear	MX-7474	KB4419A				
IC2		(IF Amp/Quad/Det)	(Bipolar) Linear	MX-4012	TK10420				
IC3		(Switching)	(C-MOS) Logic	MX-5444	HD14011B				
IC4		(Switching/Mute)	(C-MOS)	MX-5805	HD14066BP				
IC5	3	(Amp)	(Bipolar)	MX-4373	μPC324C				
IC6	иPC324C	(Zeromatic Cont)	(Bipolar)	MX-4373	μPC324C				
1C7	TDA1905	(Audio Amp)	(Bipolar)	MX-6439	TDA1905				
IC8	HA17805P/	(Voltage Regulator)	(Bipolar)	MX-4760	HA17805P/				
	TA78005AP				TA78005AP				
IC9	S-81250HG	(Voltage Regulator)	(C-MOS)	MX-7475	S-81250HG				
IC301		(PLL)	(C-MOS)	MX-4014	MC145158				
IC302		(PLL/Pre-Scaler)	(N-MOS)	MX-6967	CX7925B				
IC303	TD6127AP	(Pre-Scaler)	(Bipolar)	MX-7476	TD6127AP				
IC304		(Pre-Scaler)	(Bipolar)	MX-7477	TD6105AP				
IC305		(Voltage Regulator)	(Bipolar)	MX-6487	TA78L005AP				
1C306		(Voltage Regulator)		MX-6487	TA78L005AP				
IC501		(Decoder)	(Bipolar)	MX-7479	SN74LS145/				
10001	HD74LS145	,,			HD74LS145				
IC502		(Driver)	(Bipolar)	MX-5593	TD62504P				
IC503	100200	(CPU)	(C-MOS)	MX-7478	GRE0327				
1C504		(Memory Back Up)		MX-7480	μPD446G-45/				
10004	TC5517CF-20				TC5527CF-20				
IC701		(LCD Controller)	(C-MOS)	MX-7481	μPD7225G-00				

COILS & TRANSFORMERS							
Ref. No.		Description	RS Part Number	MFR's Part Number			
L1 L2 L3 L4 L5 L6 L7 L8 L9 L10 L11 L12 L13 L14 L15 L16 L17 L18 L19 L20	Coil, Trap Not used Coil, B.P.F	(609.5MHz)  (280MHz to 520MHz) (174MHz to 279.995MHz)	CA-1216  CA-1219  CA-1219  CA-1219  CA-1219  CA-1219  CA-1219  CA-1219  CA-1219  CA-1220  CA-1220	GR-H761  2LNB-253 2LNB-253 2LNB-253 2LNB-253 2LNB-253 2LNB-253 2LNB-253 2LNB-252			
L21 L22	Coil, B.P.F Coil, B.P.F	(108MHz to 173.995MHz) (108MHz to 173.995MHz)	CA-1221 CA-1221	3LNB-251 3LNB-251			

Ref. No.	Desci	ription	RS Part Number	MFR's Part Number
L23	Coil, B.P.F (108N	MHz to 173.995MHz)	CA-1221	3LNB-251
L24	Coil, B.P.F (108N	MHz to 173.995MHz)	CA-1221	3LNB-251
L25		MHz to 173.995MHz)	CA-1221	3LNB-251
L26		MHz to 173.995MHz)	CA-1221	3LNB-251
L27		MHz to 173.995MHz)	CA-1221	3LNB-251
L28		MHz to 173.995MHz)	CA-1221	3LNB-251
L29	Not used	71H2 (0 173.995WH2)	CA-1221	3LIND-251
		Um an 407 005MUm)	0.4.4000	41 110 050
L30		Hz to 107.995MHz)	CA-1222	4LNB-250
L31		Hz to 107.995MHz)	CA-1222	4LNB-250
L32		Hz to 107.995MHz)	CA-1222	4LNB-250
L33		Hz to 107.995MHz)	CA-1222	4LNB-250
L34	Coil, B.P.F (68M)	Hz to 107.995MHz)	CA-1222	4LNB-250
L35	Coil, B.P.F (68M)	Hz to 107.995MHz)	CA-1222	4LNB-250
L36	Coil, B.P.F (68M)	Hz to 107.995MHz)	CA-1222	4LNB-250
L37	Coil, B.P.F (68M)	Hz to 107.995MHz)	CA-1222	4LNB-250
L38	Not used	,		
L39		Hz to 67.995MHz)	CA-1223	4LNB-249
L40		Hz to 67.995MHz)	CA-1223	4LNB-249
L41	· · · · · · · · · · · · · · · · · · ·	The state of the s	CA-1223	
L41 L42		Hz to 67.995MHz)		4LNB-249
	· ·	Hz to 67.995MHz)	CA-1223	4LNB-249
L43		Hz to 67.995MHz)	CA-1223	4LNB-249
L44		Hz to 67.995MHz)	CA-1223	4LNB-249
L45		Hz to 67.995MHz)	CA-1223	4LNB-249
L46	Coil, Choke 10µH		CA-9828	LAL03NA100K
L47	Not used			
L48	Coil, B.P.F (25M)	Hz to 39.995MHz)	CA-8513	LAL03NAR33M
L49	Coil, B.P.F (25M)	Hz to 39.995MHz)	CA-8513	LAL03NAR33M
L50		Hz to 39.995MHz)	CA-8513	LAL03NAR33M
L51		Hz to 39.995MHz)	CA-8513	LAL03NAR33M
L52		Hz to 39.995MHz)	CA-8513	LAL03NAR33M
L53		Hz to 39.995MHz)	CA-8513	LALO3NAR33M
L54	Not used	112 to 33.3331/1112/	CA-0013	EMEOSIVATIOSIVI
L55		5MHz)	0.4.040	GR-H761
L56		DIVITIZ)	CA-1216	
	Coil, D.B.M		CA-1224	2LNM-258
L57	Coil, D.B.M		CA-1224	2LNM-258
L58	Coil, Choke		SB-2119	2LN0-256
L59	Coil, 1st 1F		CA-1217	GR-H763
L60	Coil, Trap (397.	5MHz)	CA-1218	GR-H762
L61	Coil, Choke 0.68µ	H	CB-2116	LALO3NAR68M
L62	Coil, Choke 2.2ml	H	CB-2118	FL5HS222J-09
L63	Coil, Choke 1µH		CB-2117	LAL03NA1R0M
L64	Coil, Choke 100µl	4	CB-2070	LALO3NA101K
L65	Coil, Choke		CA-3182	38037
L66	Stripline on P.C.B		.,	
L67	Stripline on P.C.B			•
L68	Stripline on P.C.B			
L69	•			
	Stripline on P.C.B			
L70	Stripline on P.C.B		CR 2117	1 41 00014 1 0014
L71	Coil, Choke 1µH		CB-2117	LAL03NA1R0M
L301	Coil, Choke 10µH		CA-9828	LAL03NA100K
L302	Coil, Choke 10µH		CA-9828	LAL03NA100K
L303	Coil, Choke 10µH		CA-9828	LAL03NA100K
L303	Low-pass Filter		CA-3020 CA-1215	2.5LBN-257
			CA-1215 CA-1215	2.5LNB-257
L305	Low-pass Filter			
L306	Coil, Choke 10µH		CA-9828	LALO3NA100K
L307	Coil, Choke 10µH		CA-9828	LAL03NA100K

Ref. No.	Description	RS Part Number	MFR's Part Number
L308	Coil, Choke 0.33µH	CB-2120	FL3HR33K
L309	Coil, Choke	CB-2122	2LNO-254
L310	Coil, Choke 0.33µH	CB-2120	FL3HR33K
L311	Coil, Choke	CB-2123	2LNO-255
L312	Coil, Choke	CB-2124	2LNO-253
L313	Coil, Choke 100µH	CB-2070	LALO3NA101K
L314	Coil, Choke 100µH	CB-2070	LALO3NA101K
L315	Coil, Choke 100µH	CB-2070	LALO3NA101K
L316	Coil, Choke 100µH	CB-2070	LALO3NA101K
L317	Coil, Choke	CB-2124	2LNO-253
L318	Coil, Choke 10µH	CB-2071	FL3H100K
L319	Coil, Choke 100µH	CB-2070	LALO3NA101K LALO4NA101K
L320	Coil, Choke 100µH	CB-2070	LALO3NA1ROM
L321	Coil, Choke 1µH	CB-2117	LALO3NATROM
L322	Coil, Choke 1µH	CB-2117	LAÇOSIVATNOM
L323	Low-pass Filter, Stripline on P.C.B		
L324	Low-pass Filter, Stripline on P.C.B		
L325	Low-pass Filter, Stripline on P.C.B		
L326	Low-pass Filter, Stripline on P.C.B		
L327	High-pass Filter, Stripline on P.C.B High-pass Filter, Stripline on P.C.B	1	
L328	High-pass Filter, Stripline on P.C.B		
L329	High-pass Filter, Stripline on P.C.B	•	
L330	Coil, Choke 100µH		LAL03KH101K
L501 L502	Coil, Choke 100µH		LAL03KH101K
L502	Coil, Choke 100µH		LAL03KH101K
F203	Coll, Choke 100µFi		
T1	Coil, 2nd IF	CA-1211	GR-N769
T2	Coil, 2nd IF (WFM Band)	CA-1212	GR-N764
T3	Coil, 2nd IF	CA-1212	GR-N764
T4	Coil, 3rd IF	CA-7246	GR-A470033
T5	Coil, 3rd IF	CA-7246	GR-A470033
T6	Coil, Quadrature DET. (WFM Band), 10.7MHz	CA-1213	GR-A793
T7	Coil, 3rd IF (AM Band)	CA-9882	GR-D681
T8	Coil, 3rd IF (AM Band)	CA-9883	GR-D682
T9	Coil, 2nd IF (AM, NFM Band)	· ·	GR-N797
T10	Coil, Filter		GR-N797
T11	Coil, 2nd IF (AM, NFM Band)		GR-N797
T12	Coil, 2nd IF (AM, NFM Band)	CA-1212	GR-N764
T13	Coil, Quadrature DET. (NFM Band)	CA-1214	GR-P792
T14	DC-DC Converter, Transformer	CA-1215	GE-84D-5242
T701	DC-AC Converter, Transformer	TB-0126	N19-5N75TK GE-85D-5667
<b>∆</b> T801 <sup>†</sup>	Transformer, Power	TA-0127	GE-05D-5007

† See Appendix (page 54) for ITI models.

	TRANSISTORS										
Ref. No.		Description	RS Part Number	MFR's Part Number							
Q1 Q2 Q3 Q4 Q5 Q6		2SC2458(GR) (NPN) AGC. Cont. 2SC3356 (NPN) 2SC3356 (NPN) 2SC3356 (NPN) 2SC3355 (NPN) 2SC3355 (NPN)	2SC2458GR 2SC-3356 2SC-3356 2SC-3356 2SC-3355 2SC-3355	2SC2458(GR) 2SC3356 2SC3356 2SC3356 2SC3355 2SC3355							
Q7 Q8	Not used	2SC2458(GR) (NPN)	2SC2458GR	2SC2458(GR)							

Ref. No.		Description	RS Part Number	MFR's Part Number
Q9 Q10 Q11 Q12 Q13 Q14 Q15 Q16 Q17 Q18 Q19 Q20 Q21 Q22 Q23 Q24 Q25 Q26 Q27 Q28 Q29 Q30 Q31 Q32 Q33 Q34	FET	2SC2458(GR) (NPN) 2SC2458(GR) (NPN) 2SC2668(Y) (NPN) 2SC2668(Y) (NPN) 2SC2668(Y) (NPN) 2SC2458(Y) (NPN) 2SC2458(GR) (NPN) 2SC2458(Y) (NPN) 2SC2458(Y) (NPN) 2SC2458(Y) (NPN) 2SC2668(Y) (NPN) 2SC2668(Y) (NPN) 2SC2668(Y) (NPN) 2SC2458(GR) (NPN)	2SC2458GR 2SC2458GR 2SC-2268 2SC-2268 2SK-192AGR 2SC-2458Y 2SC-2458Y 2SC-2458Y 2SC-2668 2SA-1048 2SC-2458GR 2SC-2458GR 2SC-2458L 1TR-0104 1TR-0104 1TR-0104 1TR-0104 2SC-2458GR 2SC-2458GR 2SC-2458GR	2SC2458(GR) 2SC2458(GR) 2SC2668(Y) 2SC2668(Y) 2SK192A(GR) 2SC2458(Y) 2SC2458(Y) 2SC2458(Y) 2SC2458(Y) 2SC2668(Y) 2SC2668(Y) 2SC2668(Y) 2SC2458(GR)
O301 O302 O303 O304 O305 O306 O307 O308 O309 O310 O311 O312 O313 O314 O315 O316 O317 O318 O319 O501 O502 O503 O504 O505	Not used FET	RN2005 (PNP) w/Resistor RN2005 (PNP) w/Resistor 2SC3358 (NPN) RN2005 (PNP) w/Resistor RN2005 (PNP) w/Resistor RN2005 (PNP) w/Resistor RN201 (PNP) w/Resistor RN2201 (PNP) w/Resistor	1TR-0104 1TR-0104 2SC-3358 2SC-3358 2SC-3358 2SC-3358 2SC-3358 2SC-3358 2SC-3358 2SC-3358 2SC-3358 2SC-3358 2SC-3358 2SC-3358 2SC-3358 2SC-3358 2SC-3358 2SC-3458 2SC-3458L	RN2005 RN2005 2SC3358 2SC3358 2SC3358 2SC3358 2SC3358 2SC3358 2SC3358 2SC3358 2SC3358 2SC3358 2SC3358 2SC3358 2SC3358 RN2005 RN2005 RN2005 RN2005 RN2001 RN2201 RN2201 RN2201 RN2201 RN2201 RN2201 RN2201
Q506 Q507 Q701		RN2201 (PNP) w/Resistor RN2201 (PNP) w/Resistor 2SC945(QA) (NPN)		RN2201 RN2201 2SC945(QA)

RESISTORS									
Ref. No.		Description			RS Part Number	MFR's Part Number			
R1	Not used								
R2	Chip	100 ohm	1/8W	±5%	ND-0132EBN	ERJ-8GCYJ101			
R3	Chip	82 ohm	1/8W	±5%	ND-0122EBN	ERJ-8GCYJ820			
R4	Chip	100 ohm	1/8W	±5%	ND-0132EBN	ERJ-8GCYJ101			
R5	Chip	100k ohm	1/8W	±5%	ND-0371EBN	ERJ-8GCYJ104			
R6	Chip	10k ohm	1/8W	±5%	ND-0281EBN	ERJ-8GCYJ103			
R7	Chip	3,3k ohm	1/8W	±5%	ND-0230EBN	ERJ-8GCYJ332			
R8	Chip	470k ohm	1/8W	±5%	ND-0169EBN	ERJ-8GCYJ474			
R9	Chip	470k ohm	1/8W	±5%	ND-0169EBN	ERJ-8GCYJ474			
R10	Chip	1k ohm	1/8W	±5%	ND-0196EBN	ERJ-8GCYJ102			
R11	Chip	47k ohm	1/8W	±5%	ND-0340EBN	ERJ-8GCYJ473			
R12	Chip	4.7k ohm	1/8W	±5%	ND-0247EBN	ERJ-8GCYJ472			
		1k ohm	1/8W	±5%	ND-0196EBN	ERJ-8GCYJ102			
R13	Chip	470k ohm	1/8W	±5%	ND-0169EBN	ERJ-8GCYJ474			
R14	Chip		1/8W	±5%	ND-0169EBN	ERJ-8GCYJ474			
R15	Chip	470k ohm	1/8W	±5%	ND-0371EBN	ERJ-8GCYJ104			
R16	Chip	100k ohm				ERJ-8GCYJ332			
R17	Chip	3.3k ohm	1/8W	±5%	ND-0230EBN	ERJ-8GCYJ474			
R18	Chip	470k ohm	1/8W	±5%	ND-0169EBN				
R19	Chip	470k ohm	1/8W	±5%	ND-0169EBN	ERJ-8GCYJ474			
R20	Chip	470k ohm	1/8W	±5%	ND-0169EBN	ERJ-8GCYJ474			
R21	Chip	1k ohm	1/8W	±5%	ND-0196EBN	ERJ-8GCYJ102			
R22	Chip	4.7k ohm	1/8W	±5%	ND-0247EBN	ERJ-8GCYJ472			
R23	Chip	1k ohm	1/8W	±5%	ND-0196EBN	ERJ-8GCYJ102			
R24	Chip	470k ohm	1/8W	· ±5%	ND-0169EBN	ERJ-8GCYJ474			
R25	Chip	470k ohm	1/8W	±5%	ND-0169EBN	ERJ-8GCYJ474			
R26	Chip	470k ohm	1/8W	±5%	ND-0169EBN	ERJ-8GCYJ474			
R27	Chip	470k ohm	1/8W	±5%	ND-0169EBN	ERJ-8GCYJ474			
R28	Chip	470k ohm	1/8W	±5%	ND-0169EBN	ERJ-8GCYJ474			
R29	Chip	470k ohm	1/8W	±5%	ND-0169EBN	ERJ-8GCYJ474			
R30	Chip	470k ohm	1/8W	±5%	ND-0169EBN	ERJ-8GCYJ474			
R31	Chip	1k ohm	1/8W	±5%	ND-0196EBN	ERJ-8GCYJ102			
	1	4.7k ohm	1/8W	±5%	ND-0247EBN	ERJ-8GCYJ472			
R32	Chip		1/8W	±5%	ND-0196EBN	ERJ-8GCYJ102			
R33	Chip	1k ohm		±5%		ERJ-8GCYJ474			
R34	Chip	470k ohm	1/8W	±5%	ND-0169EBN	ERJ-8GCYJ474			
R35	Chip	470k ohm	1/8W		ND-0169EBN	ERJ-8GCYJ474			
R36	Chip	470k ohm	1/8W	±5%	ND-0169EBN	ERJ-8GCYJ474			
R37	Chip	470k ohm	1/8W	±5%	ND-0169EBN	1			
R38	Chip	1k ohm	1/8W	±5%	ND-0196EBN	ERJ-8GCYJ102			
R39	Chip	4.7k ohm	1/8W	±5%	ND-0247EBN	ERJ-8GCYJ472			
R40	Chip	1k ohm	1/8W	±5%	ND-0196EBN -	ERJ-8GCYJ102			
R41	Chip	470k ohm	1/8W	±5%	ND-0169EBN	ERJ-8GCYJ474			
R42	Chip	470k ohm	1/8W	±5%	ND-0169EBN	ERJ-8GCYJ474			
R43	Chip	1k ohm	1/8W	±5%	ND-0196EBN	ERJ-8GCYJ102			
R44	Chip	4.7k ohm	1/8W	±5%	ND-0247EBN	ERJ-8GCYJ472			
R45	Chip	1k ohm	1/8W ·	±5%	ND-0196EBN	ERJ-8GCYJ102			
R46	Chip	1k ohm	1/8W	±5%	ND-0196EBN	ERJ-8GCYJ102			
R47	Chip	4.7k ohm	1/8W	±5%	ND-0247EBN	ERJ-8GCYJ472			
R48	Chip	1k ohm	1/8W	±5%	ND-0196EBN	ERJ-8GCYJ102			
R49	Chip	1k ohm	1/8W	±5%	ND-0196EBN	ERJ-8GCYJ102			
R50	Chip	4.7k ohm	1/8W	±5%	ND-0130EBN	ERJ-8GCYJ472			
R51		1k ohm	1/8W	±5%	ND-0196EBN	ERJ-8GCYJ102			
	Chip		1/8W	±5%		ERJ-8GCYJ102			
R52	Chip	1k ohm		±5%	ND-0196EBN	ERJ-8GCYJ271			
R53	Chip	270 ohm	1/8W		ND-0155EBN	ERJ-8GCYJ222			
R54	Chip	2.2k ohm	1/8W	±5%	ND-0216EBN	ERJ-8GCYJ471			
R55	Chip	470 ohm	1/8W	±5%	ND-0169EBN	ENJ-00C 134/1			

Ref. No.	Description				RS Part Number	MFR's Part Number
R56	Chip	22 ohm	1/8W	±5%	ND-0078EBN	ERJ-8GCYJ220
R57	Chip	820 ohm	1/8W	±5%	ND-0187EBN	ERJ-8GCYJ821
R58	Chip	1k ohm	1/8W	±5%	ND-0196EBN	ERJ-8GCYJ102
R59	Chip	680 ohm	1/8W	±5%	ND-0183EBN	ERJ-8GCYJ681
R60	Chip	330 ohm	1/8W	±5%	ND-0159EBN	ERJ-8GCYJ331
R61	Chip	56 ohm	1/8W	±5%	ND-0107EBN	ERJ-8GCYJ560
R62	Chip	680 ohm	1/8W	±5%	ND-0183EBN	ERJ-8GCYJ681
R63	Chip	1k ohm	1/8W	±5%	ND-0196EBN	ERJ-8GCYJ102
R64	Chip	470 ohm	1/8W	±5%	ND-0169EBN	ERJ-8GCYJ471
R65	Chip	100 ohm	1/8W	±5%	ND-0132EBN	ERJ-8GCYJ101
R66	Chip	47 ohm	1/8W	±5%	ND-0099EBN	ERJ-8GCYJ470
R67	Chip	56 ohm	1/8W	±5%	ND-0107EBN	ERJ-8GCYJ560
R68	Chip	1.5k ohm	1/8W	±5%	ND-0206EBN	ERJ-8GCYJ152
	,		1/8W	±5%	ND-0216EBN	ERJ-8GCYJ222
R69	Chip	2.2k ohm	1/8W	±5%	ND-0159EBN	ERJ-8GCYJ331
R70	Chip	330 ohm			ND-0132EBN	ERJ-8GCYJ101
R71	Chip	100 ohm	1/8W	±5%		
R72	Chip	56 ohm	1/8W	±5%	ND-0107EBN	ERJ-8GCYJ560
R73	Chip	47k ohm	1/8W	±5%	ND-0340EBN	ERJ-8GCYJ473
R74	Chip	220k ohm	1/8W	±5%	ND-0396EBN	ERJ-8GCYJ224
R75	Chip	56 ohm	1/8W	±5%	ND-0107EBN	ERJ-8GCYJ560
R76	Chip	330 ohm	1/8W	±5%	ND-0159EBN	ERJ-8GCYJ331
R77	Chip	47 ohm	1/8W	±5%	ND-0099EBN	ERJ-8GCYJ470
R78	Chip	<sup>220</sup> ohm	1/8W	±5%	ND-0149EBN	ERJ-8GCYJ221
R79	Carbon film	1k ohm	1/6W	±5%	N-0196ECC	RD16U102J
R80	Chip	56 ohm	1/8W	±5%	ND-0107EBN	ERJ-8GCYJ560
R81	Carbon film	100k ohm	1/6W	±5%	N-0371ECC	RD16U104J
R82 -	Carbon film	47k ohm	1/6W	±5%	N-0340ECC	RD16U473J
R83	Carbon film	120k ohm	1/6W	±5%	N-0375ECC	RD16U124J
R84	Carbon film	15k ohm	1/6W	±5%	N-0297ECC	RD16U153J
R85	Carbon film	47k ohm	1/6W	±5%	N-0340ECC	RD16U473J
R86	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J
R87	Carbon film	27k ohm	1/6W	±5%	N-0316ECC	RD16U273J
R88	Carbon film	56k ohm	1/6W	±5%	N-0345ECC	RD16U563J
R89	Carbon film	5.6k ohm	1/6W	±5%	N-0257ECC	RD16U562J
R90	Carbon film	2.2k ohm	1/6W	±5%	N-0216ECC	RD16U222J
R91	Carbon film	47k ohm	1/6W	±5%	N-0340ECC	RD16U473J
R92	Carbon film	47k ohm	1/6W	±5%	N-0340ECC	RD16U473J
R93		220k ohm	1/6W	±5%	N-0396ECC	RD16U224J
	Carbon film			±5% ·	N-0196ECC	RD16U102J
R94	Carbon film	1k ohm	1/6W		N-0196ECC	RD16U102J
R95	Carbon film	1k ohm	1/6W	±5%	N-0371ECC	RD16U104J
R96	Carbon film	100k ohm	1/6W	±5%	N-0149ECC	RD16U1043
R97	Carbon film	220 ohm	1/6W	±5%	N-0281ECC	
R98	Carbon film	10k ohm	1/6W	±5%		RD16U103J
R99	Carbon film	1k ohm	1/6W	±5%	N-0196ECC	RD16U102J
R100	Carbon film	1k ohm	1/6W	±5%	N-0196ECC	RD16U102J
R101	Carbon film	6.8k ohm	1/6W	±5%	N-0262ECC	RD16U682J
R102	Carbon film	2.2k ohm	1/6W	±5%	N-0216ECC	RD16U222J
R103	Carbon film	1k ohm	1/6W	±5%	N-0196ECC	RD16U102J
R104	Carbon film	220k ohm	1/6W	±5%	N-0396ECC	RD16U224J
R105	Carbon film	220 ohm	1/6W	±5%	N-0149ECC	RD16S221J
R106	Carbon film	10 ohm	1/6W	±5%	N-0063ECC	RD16U100J
R107	Carbon film	330 ohm	1/6W	±5%	N-0159ECC	RD16U331J
R108	Carbon film	120 ohm	1/6W	±5%	N-0136ECC	RD16U121J
R109	Carbon film	33k ohm	1/6W	±5%	N-0324ECC	RD16U333J
R110	Carbon film	33k ohm	1/6W	±5%	N-0324ECC	RD16U333J
R111	Not used					
R112	Carbon film	1M ohm	1/6W	±5%	N-0445ECC	RD16U105J

Ref. No.		Descriptoin		,	RS Part Number	MFR's Part Number
R113	Carbon film	1k ohm	1/6W	±5%	N-0196ECC	RD16U102J
R114	Carbon film	22k ohm	1/6W	±5%	N-0311ECC	RD16U223J
R115	Carbon film	470 ohm	1/6W	±5%	N-0169ECC	RD16U471J
R116	Carbon film	270k ohm	1/6W	±5%	N-0402ECC	RD16U274J
R117	Carbon film	15k ohm	1/6W	±5%	N-0297ECC	RD16S153J
R118	Carbon film	470 ohm	1/6W	±5%	N-0169ECC	RD16U471J
R119	Carbon film	100 ohm	1/6W	±5%	N-0132ECC	RD16U101J
R120	Carbon film	180k ohm	1/6W	±5%	N-0387ECC	RD16U184J
R121	Carbon film	33k ohm	1/6W	±5%	N-0324ECC	RD16U333J
R122	Carbon film	100 ohm	1/6W	±5%	N-0132ECC	RD16U101J
R123	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J
R124	Carbon film	4.7k ohm	1/6W	±5%	N-0247ECC	RD16U472J ·
R125	Carbon film	220k ohm	1/6W	±5%	N-0396ECC	RD16U224J
R126	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J
R127	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J
R128	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J
R129	Carbon film	2.2k ohm	1/6W	±5%	N-0216ECC	RD16U222J
R130	Carbon film	390k ohm	1/6W	±5%	N-0414ECC	RD16S394J
R131	Carbon film	3.3k ohm	1/6W	±5%	N-0230ECC	RD16S332J
R132	Carbon film	470 ohm	1/6W	±5%	N-0169ECC	RD16U471J
R133	Carbon film	1k ohm	1/6W	±5%	N-0196ECC	RD16U102J
R134	Carbon film	1k ohm	1/6W	±5%	N-0196ECC	RD16U102J
R135	Carbon film	390k ohm	1/6W	±5%	N-0414ECC	RD16S394J
R136	Carbon film	5.6k ohm	1/6W	±5%	N-0257ECC	RD16S562J
R137	Carbon film	100 ohm	1/6W	±5%	N-0132ECC	RD16U101J
R137	Carbon film	100 ohm	1/6W	±5%	N-0132ECC	RD16U101J
R139	Carbon film	100 ohm	1/6W	±5%	N-0132ECC	RD16S101J
R140	Carbon film	33k ohm	1/6W	±5%	N-0324ECC	RD16S333J
R141	Carbon film	1.5k ohm	1/6W	±5%	N-0324ECC N-0206ECC	RD16U152J
R142	Carbon film	3.3k ohm	1/6W	±5%	N-0230ECC	RD16U332J
R143	Carbon film	1.5k ohm	1/6W	±5%	N-0230ECC N-0206ECC	RD16U152J
		1.5k onin	1/6W	±5%	N-0200ECC N-0371ECC	RD16U104J
R144	Carbon film				N-0371ECC N-0324ECC	RD16U333J
R145	Carbon film	33k ohm 47k ohm	1/6W 1/6W	±5% ±5%	N-0324ECC N-0340ECC	RD16U3333
R146 R147	Carbon film Carbon film	33k ohm	1/6W	±5%	N-0340ECC	RD16U333J
R148	Carbon film	47k ohm	1/6W	±5%	N-0324ECC N-0340ECC	RD16U473J
R149	Carbon film	2.2k ohm	1/6W	±5%		RD16U222J
					N-0216ECC	RD16U104J
R150	Carbon film	100k ohm	1/6W	±5% +5%	N-0371ECC	RD16U472J
R151 R152	Carbon film Carbon film	4.7k ohm	1/6W 1/6W	±5% ±5%	N-0247ECC	RD16U105J
	Carbon film	1M ohm 10k ohm	1/6W	±5%	N-0445ECC	RD16U103J
R153			1/6W		N-0281ECC	RD16U103J
R154	Carbon film	10k ohm		±5%	N-0281ECC	RD16U472J
R155	Carbon film Carbon film	4.7k ohm	1/6W	±5%	N-0247ECC	RD16U103J
R156		10k ohm	1/6W	±5%	N-0281ECC	RD16U822J
R157	Carbon film	8.2k ohm	1/6W	±5%	N-0271ECC	
R158	Carbon film	1.5k ohm	1/6W	±5%	N-0206ECC	RD16U152J
R159	Carbon film	2.7k ohm	1/6W	±5%	N-0224ECC	RD16U272J
R160	Carbon film	1k ohm	1/6W	±5%	N-0196ECC	RD16U102J
R161	Carbon film	4.7k ohm	1/6W	±5%	N-0247ECC	RD16U472J
R162	Carbon film	3.3k ohm	1/6W	±5%	N-0230ECC	RD16U332J
R163	Carbon film	4.7k ohm	1/6W	±5%	N-0247ECC	RD16U472J
R164	Carbon film	2.7k ohm	1/6W	±5%	N-0224ECC	RD16U272J
R165	Carbon film	33k ohm	1/6W	±5%	N-0324ECC	RD16U333J .
R166	Carbon film	47k ohm	1/6W	±5%	N-0340ECC	RD16U473J
R167	Carbon film	100k ohm	1/6W	±5%	N-0371ECC	RD16U104J
R168	Carbon film	5.6k ohm	1/6W	±5%	N-0257ECC	RD16U562J
R169	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J

Ref. No.	Description				RS Part Number	MFR's Part Number	
R170	Carbon film	100k ohm	1/6W	±5%	N-0371ECC	RD16U104J	
R171	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J	
R172	Carbon film	33k ohm	1/6W	±5%	N-0324ECC	RD16U333J	
R173	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J	
R174	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J	
	Carbon film	33k ohm	1/6W	±5%	N-0324ECC	RD16U333J	
R175		33k ohm	1/6W	±5%	N-0324ECC	RD16U333J	
R176	Carbon film					RD16U472J	
R177	Carbon film	4.7k ohm	1/6W	±5%	N-0247ECC		
R178	Carbon film	1M ohm	1/6W	±5%	N-0445ECC	RD16U105J	
R179	Carbon film	1.5k ohm	1/6W	±5%	N-0206ECC	RD16U152J	
R180	Carbon film	4.7k ohm	1/6W	±5%	N-0247ECC	RD16U472J	
R181	Carbon film	100k ohm	1/6W	±5%	N-0371ECC	RD16U104J	
R182	Carbon film	4.7k ohm	1/6W	±5%	N-0247ECC	RD16U472J	
R183	Carbon film	220k ohm	1/6W	±5%	N-0396ECC	RD16U224J	
R184	Carbon film	47k ohm	1/6W	±5%	N-0340ECC	RD16U473J	
R185	Carbon film	47k ohm	1/6W	±5%	N-0340ECC	RD16U473J	
R186	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J	
R187	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J	
R188	Carbon film	100k ohm	1/6W	±5%	N-0371ECC	RD16U104J	
R189	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J	
			1/6W	±5%	N-0297ECC	RD16U153J	
R190	Carbon film	15k ohm				RD16U683J	
R191	Carbon film	68k ohm	1/6W	±5%	N-0354ECC		
R192	Carbon film	100k ohm	1/6W	±5%	N-0371ECC	RD16U104J	
R193	Carbon film	100k ohm	1/6W	±5%	N-0371ECC	RD16U104J	
R194	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J	
R195	Carbon film	22k ohm	1/6W	±5%	N-0311ECC	RD16U223J	
R196 ·	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J	
R197	Carbon film	100k ohm	1/6W	±5%	N-0371ECC	RD16U104J	
R198	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J	
R199	Carbon film	82k ohm	1/6W	±5%	N-0360ECC	RD16U823J	
R200	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J	
R201	Carbon film	47k ohm	1/6W	±5%	N-0340ECC	RD16U473J	
	Carbon film	22k ohm	1/6W	±5%	N-0311ECC	RD16U223J	
R202	1			±5%	N-0311ECC	RD16U223J	
R203	Carbon film	22k ohm	1/6W			RD16U2233	
R204	Carbon film	47k ohm	1/6W	±5%	N-0340ECC		
R205	Carbon film	22k ohm	1/6W	±5%	N-0311ECC	RD16U223J	
R206	Carbon film	47k ohm	1/6W	±5%	N-0340ECC	RD16U473J	
R207	Carbon film	1M ohm	1/6W	±5%	N-0445ECC	RD16U105J	
R208	Carbon film	2.7k ohm	1/6W	±5%	N-0224ECC	RD16U272J	
R209	Carbon film	470 ohm	1/6W	±5%	N-0169ECC	RD16U471J	
R210	Carbon film	22k ohm	1/6W	±5%	N-0311ECC	RD16U223J	
R211	Carbon film	100k ohm	1/6W	±5%	N-0371ECC	RD16U104J	
R212	Carbon film	1M ohm	1/6W	±5%	N-0445ECC	RD16U105J	
R213	Carbon film	1k ohm	1/6W	±5%	N-0196ECC	RD16U102J	
R214†	Metal film	3.3 ohm	1W	±5%	N-0037EGE	RNS1.0-3R3J	
R215	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16S103J	
R216	Carbon film	47 ohm	1/6W	±5%	N-0099ECC	RD16S470J	
				±5%	N-0099ECC N-0022ECC	RD16U010J	
R217	Carbon film	1 ohm	1/6W	±5%		RD16U271J	
R218	Carbon film	270 ohm	1/6W		N-0155ECC	RD16U563J	
R219	Carbon film	56k ohm	1/6W	±5%	N-0345ECC		
R220	Carbon film	33k ohm	1/6W	±5%	N-0324ECC	RD16U333J	
R221	Carbon film	470k ohm	1/6W	±5%	N-0423ECC	RD16U474J	
R222	Carbon film	180k ohm	1/6W	±5%	N-0387ECC	RD16U184J	
R223	Carbon film	2.2M ohm	1/6W	±5%	N-0454ECC	RD16U225J	
R224	Carbon film	2.2M ohm	1/6W	±5%	N-0454ECC	RD16U225J	
R225	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J	
R226	Carbon film	330 ohm	1/6W	±5%	N-0159ECC	RD16U331J	
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<sup>†</sup> See Appendix (page 54) for ITI models.

Ref. No.		Description			RS Part Number	MFR's Part Number
R227	Carbon film	220 ohm	1/6W	±5%	N-0149ECC	RD16U221J
R228	Carbon film	100k ohm	1/6W	±5%	N-0371ECC	RD16U104J
R229	Carbon film	15k ohm	1/6W	±5%	N-0297ECC	RD16U153J
R230	Carbon film	33k ohm	1/6W	±5%	N-0324ECC	RD16S333J
	Carbon film	220k ohm	1/6W	±5%	N-0396ECC	RD16U224J
R231			1/6W	±5%	N-0297ECC	RD16U153J
R232	Carbon film	15k ohm			N-0324ECC	RD16U333J
R233	Carbon film	33k ohm	1/6W	±5%	1	
R234	Carbon film	5.6k ohm	1/6W	±5%	N-0257ECC	RD16U562J
R235 <sup>†</sup>	Metal film	1 ohm	1W	±5%	N-0022EGE	RNS1.0-010J
R236	Chip	3.3k ohm	1/8W	±5%	ND-0230EBN	ERJ-8GCYJ332
R237	Carbon film	100 ohm	1/6W	±5%	N-0132ECC	RD16U101J
R238	Carbon film	4.7k ohm	1/6W	±5%	N-0247ECC	RD16U472J
R239	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J
R240	Carbon film	4.7k ohm	1/6W	±5%	N-0247ECC	RD16U472J
R241	Chip	4.7k ohm	1/8W	±5%	ND-0247EBN	ERJ-8GCYJ472
R242	Chip	10k ohm	1/8W	±5%	ND-0281EBN	ERJ-8GCYJ103
			1/8W	±5%	ND-0247EBN	ERJ-8GCYJ472
R243	Chip	4.7k ohm			N-0396ECC	RD16U224J
R244	Carbon film	220k ohm	1/6W	±5%		
R245	Carbon film	180k ohm	1/6W	±5%	N-0387ECC	RD16U184J
R246	Carbon film	4.7k ohm	1/6W	±5%	N-0247ECC	RD16U472J
R247	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J
R248	Carbon film	220 ohm	1/4W	±5%		ERD-25PJ221
R249	Carbon film	220 ohm	1/4W	±5%		ERD-25PJ221
R250	Carbon film	220 ohm	1/4W	±5%		ERD-25PJ221
R251	Carbon film	220 ohm	1/4W	±5%		ERD-25PJ221
R252	Carbon film	220 ohm	1/4W	±5%		ERD-25PJ221
R253	Carbon film	220 ohm	1/4W	±5%		ERD-25PJ221
	1			±5%		ERD-25PJ221
R254	Carbon film	220 ohm	1/4W		ND-0132EBN	ERJ-8GCYJ101
R255	Chip	100 ohm	1/8W	±5%		
R256	Carbon film	1 ohm	1/2W	±5%	N-0022EFE	RNF1/2S1R0J
R301	Carbon film	2.2k ohm	1/6W	±5%	N-0216ECC	RD16U222J
R302	Carbon film	100 ohm	1/6W	±5%	N-0132ECC	RD16U101J
R303	Carbon film	220 ohm	1/6W	±5%	N-0149ECC	RD16U221J
R304	Carbon film	47k ohm	1/6W	±5%	N-0340ECC	RD16U473J
R305	Carbon film	2.2k ohm	1/6W	±5%	N-0216ECC	RD16U222J
R306	Carbon film	1k ohm	1/6W	±5%	N-0196ECC	RD16U102J
			1/6W		N-0132ECC	RD16U101J
R307	Carbon film	100 ohm		±5%	N-0149ECC	RD16U221J
R308	Carbon film	220 ohm	1/6W	±5%	N-0371ECC	RD16U2213
R309	Carbon film	100k ohm	1/6W	±5%		
R310	Carbon film	10 ohm	1/6W	±5%	N-0063ECC	RD16U100J
R311	Carbon film	100 ohm	1/6W	±5%	N-0132ECC -	RD16U101J
R312	Carbon film	33k ohm	1/6W	±5%	N-0324ECC	RD16U333J
R313	Carbon film	100 ohm	1/6W	±5%	N-0132ECC	RD16U101J
R314	Carbon film	10 ohm	1/6W	±5%	N-0063ECC	RD16U100J
R315	Carbon film	47k ohm	1/6W	±5%	N-0340ECC	RD16U473J
R316	Carbon film	1k ohm	1/6W	±5%	N-0196ECC	RD16U102J
R317	Carbon film	100 ohm	1/6W	±5%	N-0132ECC	RD16U101J
					N-0149ECC	RD16U221J
R318	Carbon film	220 ohm	1/6W	±5%	N-0340ECC	RD16U2Z13
R319	Carbon film	47k ohm *	1/6W	±5%		
R320	Carbon film	220 ohm	1/6W	±5%	N-0149ECC	RD16U221J
R321	Carbon film	100 ohm	1/6W	±5%	N-0132ECC	RD16U101J
R322	Carbon film	100k ohm	1/6W	±5%	N-0371ECC	RD16U104J
R323	Carbon film	100 ohm	1/6W	±5%	N-0132ECC	RD16U101J
R324	Carbon film	47k ohm	1/6W	±5%	N-0340ECC	RD16U473J
R325	Carbon film	220 ohm	1/6W	±5%	N-0149ECC	RD16U221J
R326	Carbon film	100 ohm	1/6W	±5%	N-0132ECC	RD16U101J
R327	Carbon film	220 ohm	1/6W	±5%	N-0149ECC	RD16U221J

Ref. No.		Description			RS Part Number	MFR's Part Number
R328	Carbon film	47k ohm	· 1/6W	±5%	N-0340ECC	RD16U473J
R329	Chip	1k ohm	1/8W	±5%	ND-0196EBN	ERJ-8GCYJ102
R330	Carbon film	470 ohm-	1/6W	±5%	N-0169ECC	RD16U471J
R331	Carbon film	220 ohm	1/6W	±5%	N-0149ECC	RD16U221J
R332	Chip	2.2k ohm	1/8W	±5%	ND-0216EBN	ERJ-8GCYJ222
R333	Chip	4.7k ohm	1/8W	±5%	ND-0247EBN	ERJ-8GCYJ472
R334	Chip	100k ohm	1/8W	±5%	ND-0371EBN	ERJ-8GCYJ104
R335	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J
R336	Carbon film	220 ohm	1/6W	±5%	N-0149ECC	RD16U221J
R337	Chip	1k ohm	1/8W	±5%	ND-0196EBN	ERJ-8GCYJ102
R338	Carbon film	470 ohm	1/6W	±5%	N-0169ECC	RD16U471J
		2.2k ohm	1/8W	±5%	ND-0216EBN	ERJ-8GCYJ222
R339	Chip		1/8W	±5%	ND-0247EBN	ERJ-8GCYJ472
R340	Chip	4.7k ohm			ND-0371EBN	ERJ-8 GCYJ104
R341	Chip	100k ohm	1/8W	±5%	N-0281ECC	
R342	Carbon film	10k ohm	1/6W	±5%		RD16U103J
R343	Carbon film	1k ohm	1/6W	±5%	N-0196ECC	RD16U102J
R344	Not used				11.04.005.00	224214741
R345	Carbon film	470 ohm	1/6W	±5%	N-0169ECC	RD16U471J
R346	Carbon film	100 ohm	1/6W	±5%	N-0132ECC	RD16U101J
R347	Carbon film	8.2k ohm	1/6W	±5%	N-0271ECC	RD16U822J
R348	Carbon film	330 ohm	1/6W	±5%	N-0159ECC	RD16U331J
R349	Carbon film	4.7k ohm	1/6W	±5%	N-0247ECC	RD16U472J .
R350	Carbon film	100 ohm	1/6W	±5%	N-0132ECC	RD16U101J
R351	Carbon film	100 ohm	1/6W	±5%	N-0132ECC	RD16U101J
R352	Chip	15k ohm	1/8W	±5%	ND-0297EBN	ERJ-8GCYJ153
R353	Carbon film	470 ohm	1/6W	±5%	N-0169ECC	RD16U471J
R354	Chip	4.7k ohm	1/8W	±5%	ND-0247EBN	ERJ-8GCYJ472
R355	Carbon film	33k ohm	1/6W	±5%	N-0324ECC	RD16U333J
R356	Carbon film	4.7k ohm	1/6W	±5%	N-0247ECC	RD16U472J
R357	Carbon film	2.2k ohm	1/6W	±5%	N-0216ECC	RD16U222J
R358	Carbon film	2.2k ohm	1/6W	±5%	N-0216ECC	RD16U222J
R359	Not used	Z.ZK OIIII	1/000	±970	14-02-102-00	
1	1	5.6k ohm	1/6W	±5%	N-0257ECC	RD16U562J
R360	Carbon film	o.ok onm	1/000	TO /0	14-025/200	110700025
R361	Not used					
R362	Not used					
R363	Not used	41. 1	4 (0)41	+E0/	NOTOGECC	RD16U102J
R364	Carbon film	1k ohm	1/6W	±5%	N-0196ECC N-0297ECC	RD16U153J
R365	Carbon film	15k ohm	1/6W	±5%		RD16U103J
R366	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	
R367	Carbon film	1k ohm	1/6W	±5%	N-0196ECC	RD16U102J
R368	Carbon film	100 ohm	1/6W	±5%	N-0132ECC	RD16U101J RD16U222J
R369	Carbon film	2.2k ohm	1/6W	±5%	N-0216ECC	<b>.</b>
R370	Carbon film	820 ohm	1/6W	±5%		RD16U821J
R371	Carbon film	1k ohm	1/6W	±5%	N-0196ECC	RD16U102J
R501	Carbon film	100k ohm	1/6W	±5%	N-0371ECC	RD16U104J
R502	Carbon film	1M ohm	1/6W	±5%	N-0445ECC	RD16U105J
R503	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J
R504	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J
R505	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J
R506	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J
R507	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J
R508	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J
R509	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J
R510	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J
1			1/6W	±5%	N-0281ECC	RD16U103J
R511	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J
R512	Carbon film	10k ohm		±5%	N-0281ECC	RD16U103J
R513	Carbon film	10k ohm	1/6W	TO /0	14-0201200	

Ref. No.		Description			RS Part Number	MFR's Part Number
R514	Carbon film	47k ohm	1/6W	±5%	N-0340ECC	RD16U473J
R515	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J
R516	Carbon film	560k ohm	1/6W	±5%		RD16U564J
R517	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J
R518	Carbon film	47k ohm	1/6W	±5%	N-0340ECC	RD16U473J
R519	Carbon film	47k ohm	1/6W	±5%	N-0340ECC	RD16U473J
R520	Carbon film	47k ohm	1/6W	±5%	N-0340ECC	RD16U473J
R521	Carbon film	47k ohm	1/6W	±5%	N-0340ECC	RD16U473J
R522	Carbon film	47k ohm	1/6W	±5%	N-0340ECC	RD16U473J
R701	Carbon film	4.7k ohm	1/6W	±5%	N-0247ECC	RD16U472J
R702	Carbon film	100 ohm	1/6W	±5%	N-0132ECC	RD16U101J
R703	Carbon film	10 ohm	1/6W	±5%	N-0063ECC	RD16U100J
R704	Carbon film	1.2k ohm	1/6W	±5%		RD16U122J
R705	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J
R706	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J
R707	Carbon film	10k ohm	1/6W	±5%	N-0281ECC	RD16U103J
R708	Carbon film	180k ohm	1/6W	±5%	N-0387ECC	RD16U184J
R709	Carbon film	22 ohm	1/6W	±5%		RD16U220J
R710	Carbon film	150 ohm	1/6W	±5%		RD16U151J
R711	Carbon film	6.8k ohm	1/6W	±5%	N-0262ECC	RD16U682J
R801 <sup>†</sup>	Solid	1.8M ohm	1/2W	±10%	N-0521FFB	ERC-12GK185

<sup>†</sup> See Appendix (page 54) for ITI models.

	CRYSTALS & FILTERS									
Ref. No.		Descriptoin		RS Part Number	MFR's Part Number					
X1 X2 X301 CX501 XF1 XF2 CF1 CF2	Crystal Crystal Crystal Ceramic Oscillat Crystal Filter Crystal Filter Ceramic Filter Ceramic Filter	TC-43 type TC-43 type TX1824G-3 type tor MF48RB type MF48RB type	37.8 MHz 48.045 MHz 10 MHz 7.37 MHz 48.5 MHz 48.5 MHz 10.7 MHz 455 kHz	CX-0551 CX-0552 CX-0480 C-1923 C-1923 C-1924 C-1044	37.8 MHz 48.045 MHz 10 MHz CST7.37MT 48.5 MHz 48.5 MHz SFJ10.7 MA2-A CFW455D					

VARIABLE RESISTORS					
Ref. No. Description		RS Part Number	MFR's Part Number		
VR801 · VR802	Pot. Volume w/Switch Pot. Squelch	50k ohm (A) 10k ohm (C)	P-7787 P-8029	5M1411-50KA-20A K1611008TE-10KC-20	

MISCELLANEOUS						
Ref. No.	Description		RS Part Number	MFR's Part Number		
CN-1	Pin, connector	3 Pin Male	J-5678	PI22A03M		
CN-2	Pin, connector	4 Pin Male	J-4050	P122A04M		
CN-3	Pin, connector	2 Pin Male	J-4051	PI22A02M		
CN-4	Pin, connector	3 Pin Male	J-5678	PI22A03M		
CN-5	Pin, connector	2 Pin Male	J-4051	PI22A02M		
CN-6	Pin, connector	3 Pin Male	J-5678	PI22A03M		
CN-501	Pin, connector	9 Pin Male		PI22A09M		
CN-502	Pin, connector	13 Pin Male		PI22A13M		
CN-503	Pin, connector	8 Pin Male		PI22A08M		
CN-504	Pin, connector	15 Pin Male		PI22A15M		
CN-505	Pin, connector	11 Pin Male		PI22A11M		
EL701	Electro Luminescence		L-2082	GE-85D-6011		
J1	Jack		J-5939	TMP-J01X-V1		
J2	Jack		J-5939	TMP-J01X-V1		
<b>J</b> 3	Jack, Tape Out		J-1820	JPJ0573-01-010		
J4	Jack Ext. Speaker		J-1821	S-G8036		
J5	Jack, DC		J-1140	HEC0470-01-630		
J6	Jack, Antenna	,	J-0085	GE-85D-5383		
J801	Jack, Head Phone		J-1824	S-G8022#2		
LCD701	LCD			FTD-8200P		
SW1	Switch, slide (Attenuator)		S-3627	SSFZUB22-07		
SW501	Switch, push (Reset)			SKHHLM		
SW701	Switch, push (Sound Squelch)	•	S-7094	ESB-64500 type 1		
SW702	Switch, push (Dimmer)		S-7094	ESB-64500 type 1		
TH-1	Thermister	•	T-1024	HT-100		
TP1	Pin, test			ERD-25TC0		
TP2	Pin, test			ERD-25TC0		
TP3	Pin, test			ERD-25TC0		
TP4	Pin, test			ERD-25TC0		
TP5	Pin, test			ERD-25TC0		
TP301	Pin, test			ERD-25TC0		
TP302	Pin, test			ERD-25TC0		
	Antenna, rod			GE-86D-6519		
	Binder, AC cord			NO.5121/W-140		
	Binder, cord			PLT1M-M/BK-1		
	Cord, AC	6.5 feet (UL)		GE-86D-6312		
	Foot			OK15		
	Snap, battery w/cable	1 type, L=250mm	B-0209			
SP801	Speaker		SP-5374	SM-77KY-2		
	Strainrelief, Line Cord		HB-0705	SR-3P-4		
	Switch, push		S-7093	SKHHPK		
	Terminal, solderless		HB-9616	1-SD		
	Wire Kit			#327(A)		

# MECHANICAL PARTS LIST

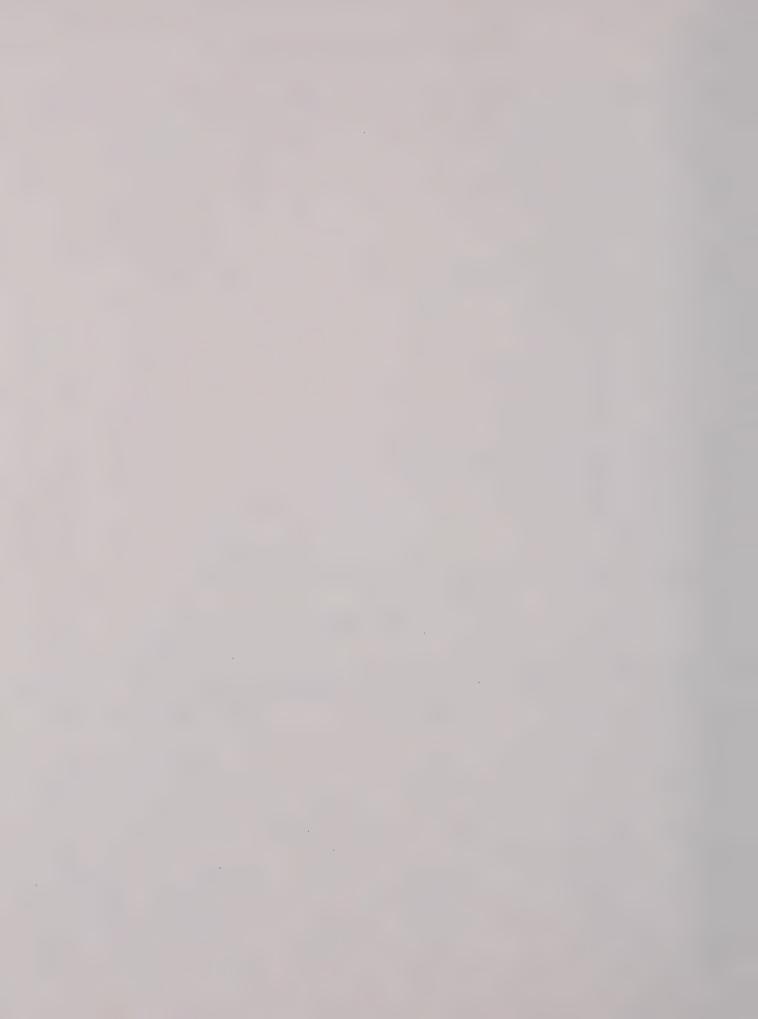
Ref. No.	Description	RS Part Number	MFR's Part Number
1	Cabinet	Z-1484	GE-86B-6360
2	Chassis		GE-86A-6359
3	PCB Ass'y, Linear		GA-86D-6316
4	Bracket, Antenna Connector		GE-86D-6362
5 J6		J-0085	GE-85D-5383
1	Jack, Antenna	0 0000	GE-86D-6381
6	Shield, Antenna		GE-86D-6377
7	Case, IF Shield		GE-86D-6379
8	Case, BPF Shield		GE-86D-6378
9	Top, IF Shield		GE-86D-6380
10	Top, BPF Shield		GE-86D-6605
11	Plate, 1st IF Shield		
12	Heat Sink		GE-86D-6363
13	PCB Ass'y, PLL		GA-86D-6317
14	Bottom PLL Shield (A) Filter		GE-86D-6511
15	Bottom PLL Shield (A) VCO		GE-86D-6510
16	Bottom PLL Shield (B) IC		GE-86D-6513
17	Bottom PLL Shield (B) VCO		GE-86D-6512
18	Fiber, PLL Shield (A) Filter		GE-86D-6515
19	Fiber, PLL Shield (A) VCO		GE-86D-6514
20	Fiber, PLL Shield (B) IC		GE-86D-6517
21	Fiber, PLL Shield (B) VCO		GE-86D-6516
22	Case, PLL Shield (A)		GE-86D-6368
23	Case, PLL Shield (B)		GE-86D-6372
24	Case, PLL Shield (C)		GE-86D-6376
25	Top, PLL Shield (A)		GE-86D-6369
	Top, PLL Shield (B)		GE-86D-6373
26	Plate, PLL Shield (D) VCO		GE-86D-6528
27		j.	GA-86D-6318
28	PCB Ass'y, Logic		GE-86D-6388
29	Case Logic Shield		GE-86D-6389
30	Top, Logic Shield		GE-86D-6529
31	Fiber, Logic Shield	TA 0127	GE-85D-5667
32 T801	Transformer, Power	TA-0127	
33	Box, Battery	DB-0741	GE-21D-5728
34	Cover, Battery Compartment	DB-0094	GE-79D-0113
35	Cushion, Battery		GE-21D-5795
36	Cord, AC 6.5 feet (UL)	W-3388	GE-86D-6312
37 SP801	Speaker 8 ohm 2W	SP-5374	SM-77KY-2
38	Bracket Speaker		GE-86D-6361
39	Mattress, Speaker		GE-86D-6505
40	Escutcheon Ass'y, Front (Non Repairable)	Z-1483	GA-86D-6385
	Escutcheon, Front		GE-86A-6354
	Protecter, Escutcheon		GE-86C-6500
	Window, LCD		GE-86D-6355
41	PCB Ass'y, LCD		GA-86D-6319
42 LCD701	LCD		FTD-8200P
43	Electro Luminescence		GE-85D-6067
44	Holder, LCD		GE-85D-6386
45	Cushion, LCD		GE-85D-6521
46	Knob, Dimmer/Sound Squelch	K-1064	GE-86D-6357
47	Shield, LCD		GE-86D-6364
48	Fiber, LCD Shield		GE-86D-6365
49	PCB Ass'y, Keyboard		GA-86D-6320
			GE-86D-6366
50	Shield, Keyboard		GE-86D-6367
51	Fiber, Keyboard		GE-86D-6509
52	Plate, Ground		5M1411-50KA-20A
53	Volume, Switch		
54	Squelch, Volume		K1611008TE-10KC-2

Ref. No.	Description	RS Part Number	MFR's Part Number
55	Jack, Head Phone	J-1824	S-G8022#2
56	Knob, Volume/Squelch	K-1063	GE-86D-6356
57	Antenna, Telescopic	A-0083	GE-86D-6519
58	Foot	F-0054	OK-15
59	Panel, Keybaord	Z-1482	GE-86D-6358
60	Himelon (A)		GE-86D-6522
61	Himelon (B)		GE-86D-6523
62	Himelon (C)		GE-86D-6524
63	Himelon Speaker		GE-86D-6387
64	Screw, Panhead With Washer Ass'y Tind ZU		PM2.6x5
65	Screw, Panhead With Washer Ass'y ZU		PM3x6
66	Screw, Panhead P tight		PT2.6x5
67	Screw, Panhead Tapping		PT3x6
68	Screw, Panhead		PM3x6
69	Screw, Panhead Tapping		PT2.6x6
70	Screw, Panhead P tight		PT3×8
A	Screw, Bindinghead BLK		BM3x6
71	Screw, Bindinghead With Washer Ass'y ZU	110 4044	BM3x12
72	Screw, Bindinghead	HD-1814	BM4x8
73	Screw, Bindinghead Tapping		BT3x6
74	Screw, Bindinghead	HD-2585	GE-79D-0541
75	Screw, Countersunkhead Machine	HU-2585	CM3x6 ETW 3m/m
76	Washer, External Toothed Lock 3m/m	HD-8966	ITW 3m/m
77	Washer, Internal Toothed Lock 3m/m	HD-8900	
78 79	Nut, flange serrated		3 DIA 4 DIA
80	Nut, flange serrated		7 DIA
80 .	Nut Nut Grommet		, DIA
01	. Nut, Grommet	·	
	Hardware Kit	HW-200019	#327(B)

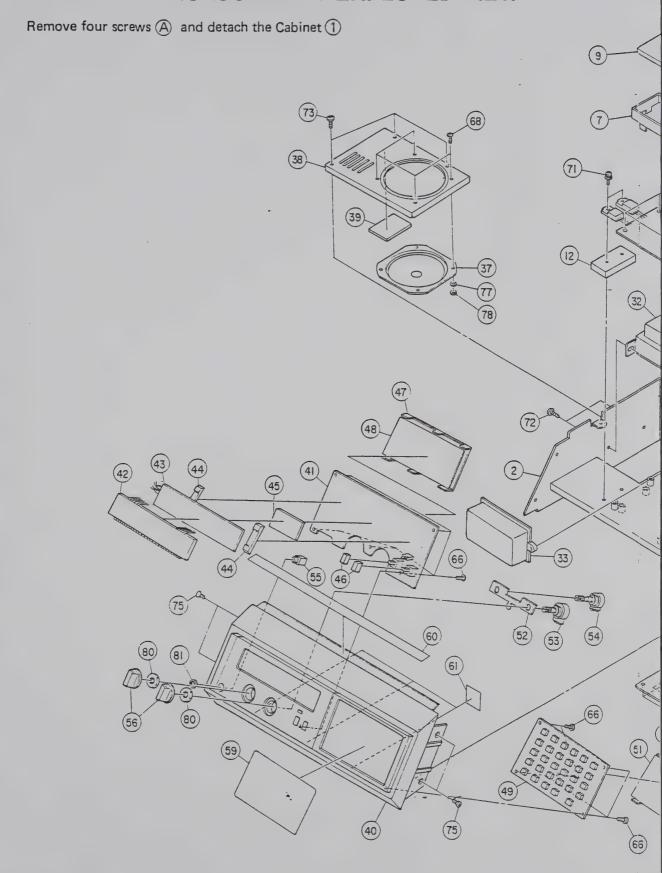
## **APPENDIX**

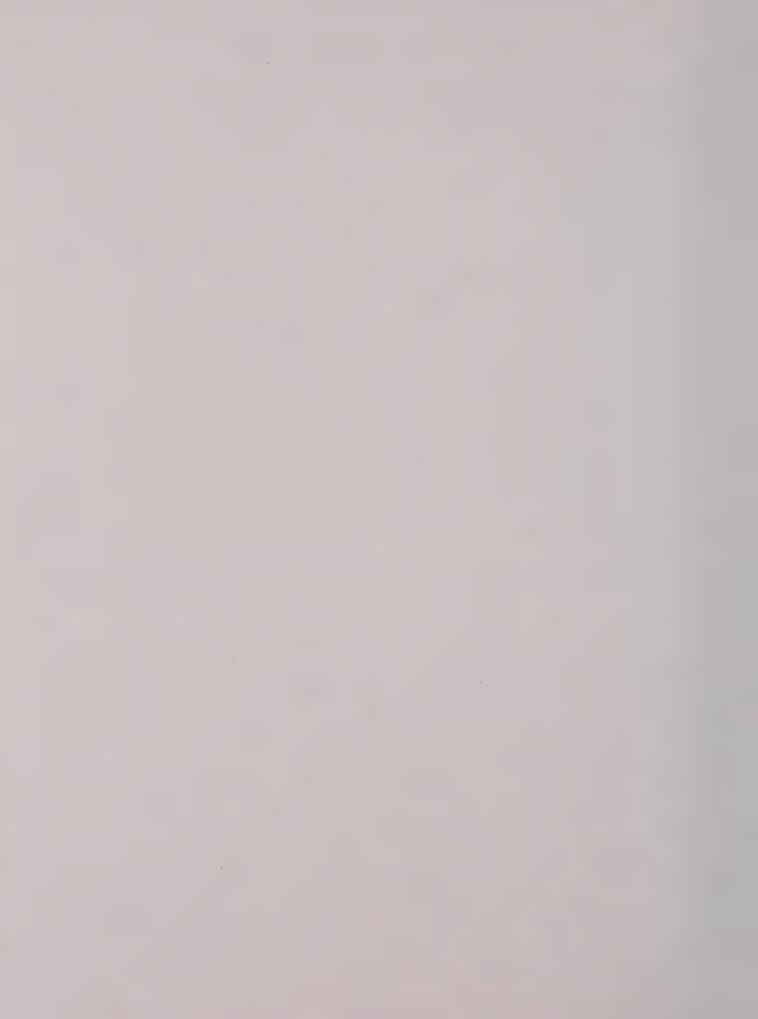
### Variable parts for each model are below.

Ref. No.	Description	USA	CANADA	AUSTRALIA	UK
R214	Metal Film	RNS1.0-3R3J	-	RNS1.0-3R3J	RNS1.0-3R3J
	3.3 ohm 1W ±0.5% Metal Film	-	ERQ-12AJ-3R3	-	-
R235	3.3 ohm 1/2W ±0.5% Metal Film	RSN1.0-010J	-	RNS1.0-010J	RNS1.0-010J
	1 ohm 1W ±0.5% Metal Film	-	ERQ-1AJ-2R2	-	-
R801	2.2 ohm 1W ±0.5% Solid Film	ERC-12GK-185	ERC-12GK-185	Not used	Not used
D512 T801	1.8M ohm 1/2W ±10% 1S2076A (Silicon) Transformer, Power Cord, AC	Not used GE-85D-5667 GE-86D-6312	Not used Z1643 GE-86D-6312	1S2076A K7087 PZ-ACTF-LD-AS	1S2076A K7087 HAR CLASS II BLK 2m
	Strainrelief, Line Cord Chassis	SR-3P-4 GE-86A-6359	SR-3P-4 GE-86A-6359	SR-5N-4 GE-86A-6359A	SR-4N-4 GE-86A-6359A

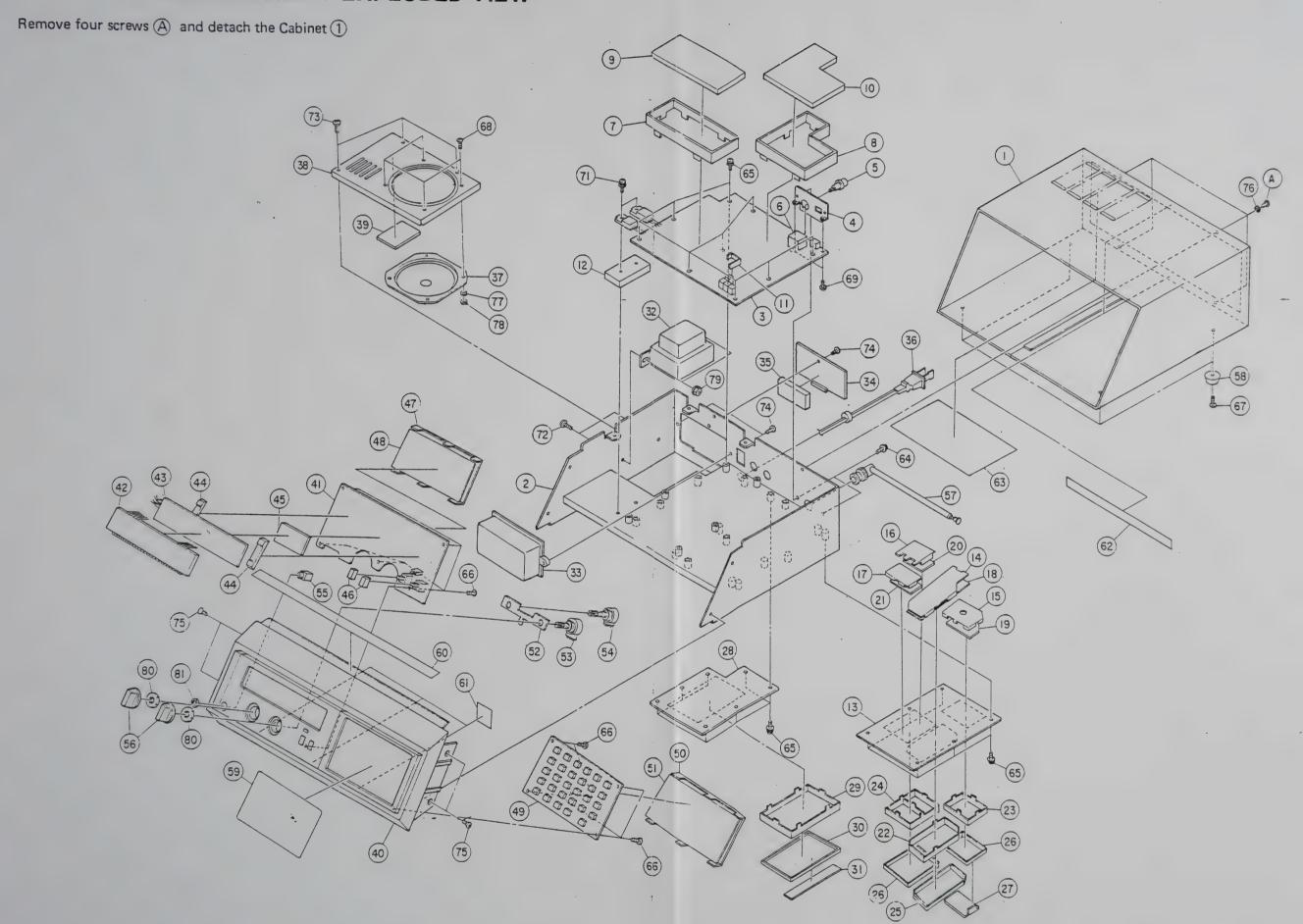


### DISASSEMBLY/EXPLODED VIEW

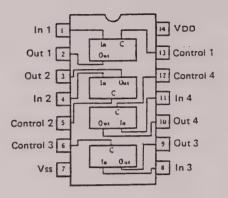


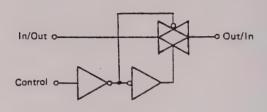


# DISASSEMBLY / EXPLODED VIEW

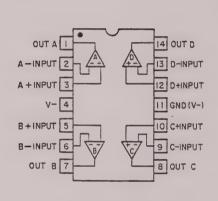


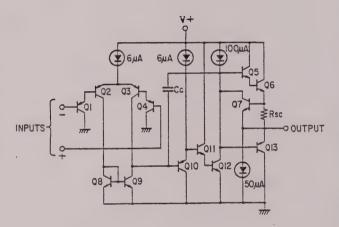
### IC4 HD14066BP



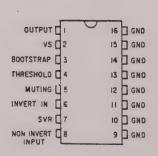


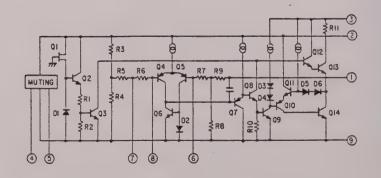
### 1C5, 6 μPC324C



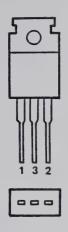


#### IC7 TDA1905

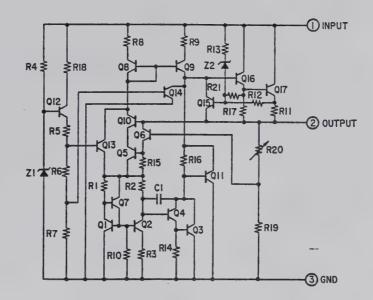




### IC8 TA78005AP or HA17805

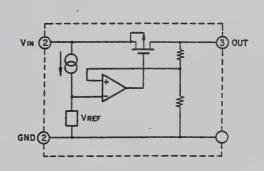


- 1. INPUT
- 2. OUTPUT
- 3. GND

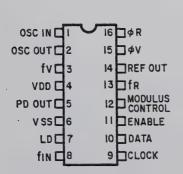


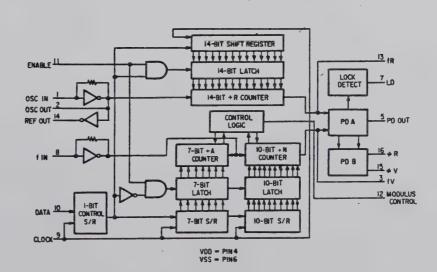
#### IC9 S-81250HG



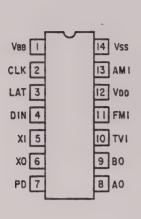


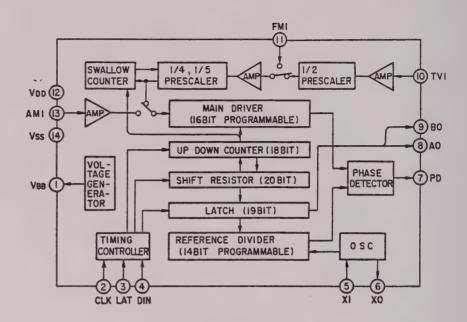
### IC301 MC145158



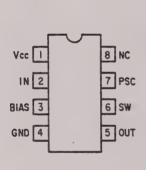


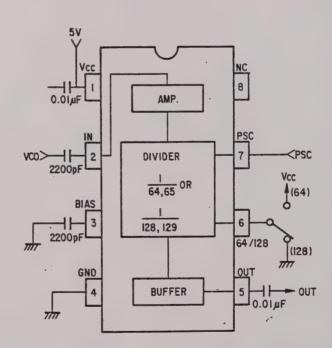
#### 1C302 CX7925B



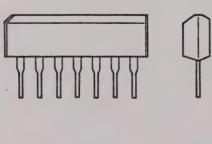


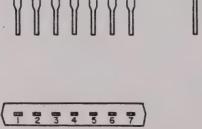
#### IC303 TD6127AP

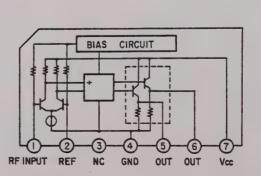




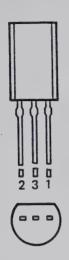
#### IC304 TD6105AP



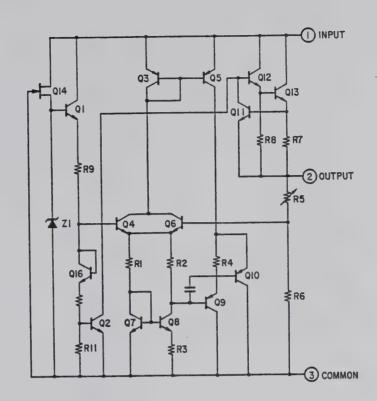




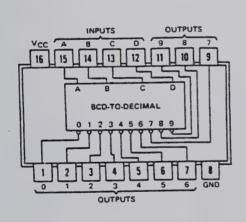
### IC305, 306 TA78L005AP

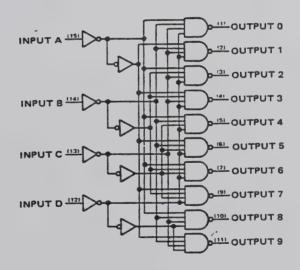


- 1. INPUT
- 2 OUTPUT
- 3. COMMON

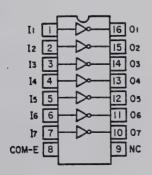


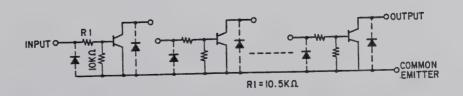
#### IC501 SN74LS145 or HD74LS145

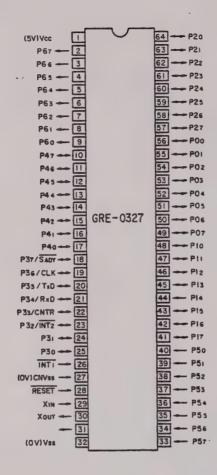


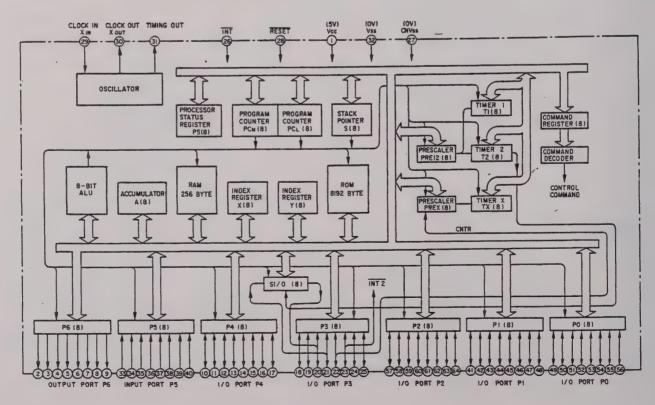


### IC502 TD62504P

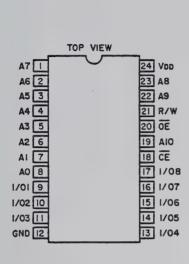


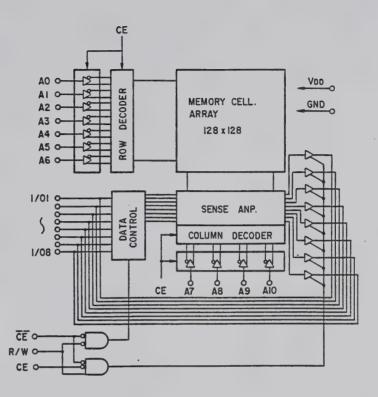




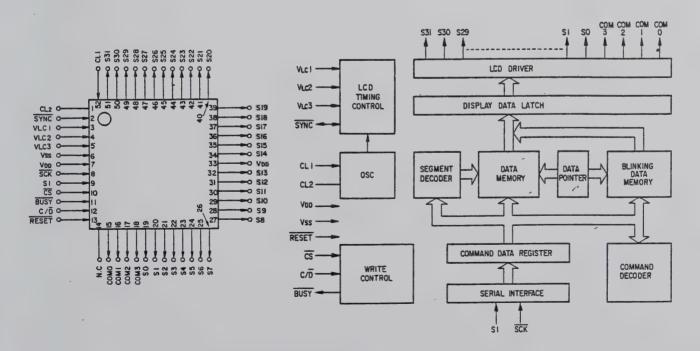


### IC504 TC5517CF-20 or μPD446G-45





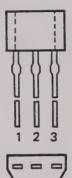
#### IC701 µPD7225G



### TRANSISTOR LEAD IDENTIFICATION

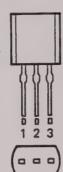
(A) 2SC2458(Y,GR) 2SC2458L(GR) 2SC2668(Y)

2SA1048 2SC3327 RN2201



- 1. EMITTER
- 2. COLLECTOR
- 3. BASE

(B) 2SC3355



- 1. BASE
- 2. EMITTER
- 3. COLLECTOR

(C) 2SC3356





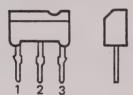
- 1. EMITTER
- 2. BASE
- 3. COLLECTOR

000

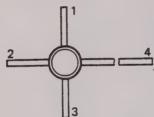
(D) 2SD1406

- 1. BASE
- 2. COLLECTOR
- 3. EMITTER

(E) 2SD1330











- 1. BASE
- 2. COLLECTOR
- 3. EMITTER

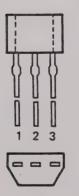
- - 1. EMITTER
  - 2. BASE
  - 3. EMITTER
- 4. COLLECTOR



(G) 2SK184(GR)

- \_ \_ \_
- 1. DRAIN
- 2. GATE
- 3. SOURCE

(H) 2SK194A(GR)



- 1. DRAIN
- 2. SOURCE
- 3. GATE

(I) 2SC945(AQ)



- 1. EMITTER
- 2. COLLECTOR
- 3. BASE

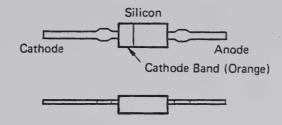
(J) RN2005



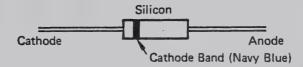
- 1. EMITTER
- 2. COLLECTOR
- 3. BASE

### DIODE IDENTIFICATION AND LEAD POLARITY

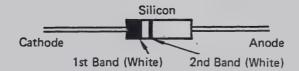
### A) 1SS241



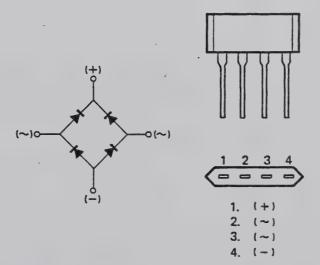
#### B) 1S2076A



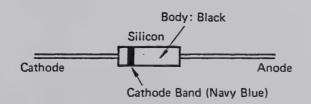
### C) SR1K-2



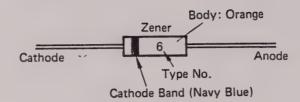
### D) 1B4B41



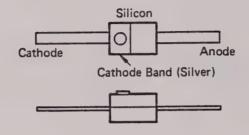
### E) 1S1585



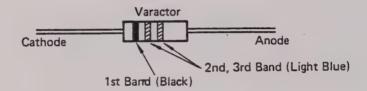
### F) HZ6B2L, HZ9BLL HZ11BLL



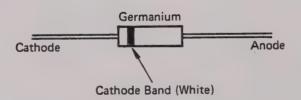
### G) 1T25



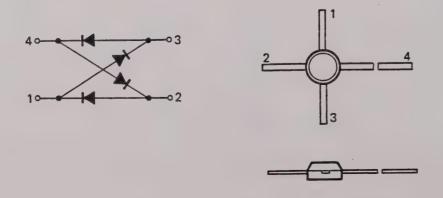
### H) 1SV89



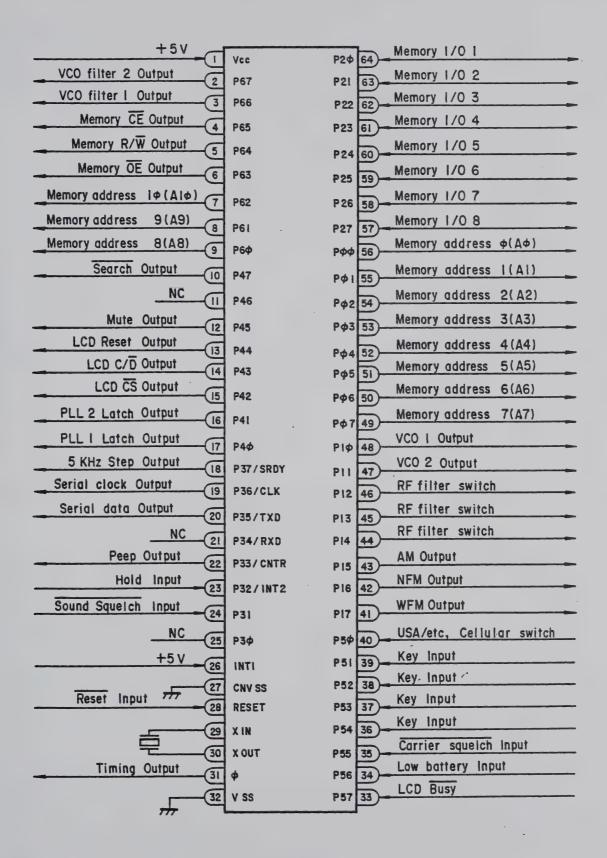
### I) OA90-R



### J) ND487CI-3R



### MICROPROCESSOR (IC-503) PIN ALLOCATION



## MICROPROCESSOR (IC-503) PORT FORMAT

Pin No.	Symbol	Function	Pin No.	Symbol	Function
1	VCC	+5 V	33	P57	LCD Busy
2	P67	VCO filter 2 Output	34	P56	Low battery Input
3	P66	VCO filter 1 Output	35	P55	Carrier Squelch Input
4	P67	Memory CE Output	36	P54	Key Input
5	P64	Memory R/W Output	37	P53	Key Input
6	P63	Memory OE Output	38	P52	Key Input
7	P62	Memory address 10 (A10)	39	P51	Key Input
8	P61	Memory address 9 (A9)	40	P50	USA/etc., Cellular Switch
9	P60	Memory address 8 (A8)	41	P17	WFM Output
10	P47	Search Output	42	P16	NFM Output
11	P46	NC	43	P15	AM Output
12	P45	Mute Output	44	P14	RF filter Switch
13	P44	LCD Reset Output	45	P13	RF filter Switch
14	P43	LCD C/D Output	46	D12	RF filter Switch
15	P42	LCD CS Output	47	P11	VCO 2 Output
16	P41	PLL 2 Latch Output	48	P10	VCO 1 Output
17	P40	PLL 1 Latch Output	49	P07	Memory address 7 (A7)
18	P37/SRDY	5 kHz Step Output	50	P06	Memory address 6 (A6)
19	P36/CLK	Serial Clock Output	51	P05	Memory address 5 (A5)
20	P35/TxD	Serial Data Output	52	P04	Memory address 4 (A4)
21	P34/RxD	NC NC	53	P03	Memory address 3 (A3)
22	P33/CNTR	Peep Output	54	P02	Memory address 2 (A2)
23	P32/INT2	Hold Input	55	P01	Memory address 1 (A1)
24	P31	Sound Squelch Input	56	P00	Memory address 0 (A0)
25	P30	NC ·	57	P27	Memory I/O 8
26	INT1	+5 V	58	P26	Memory I/O 7
27	CNVSS	GND	59	P25	Memory I/O 6
28	RESET	Reset Input	60	P24	Memory I/O 5
29	XIN	Clock Input	61	P23	Memory I/O 4
30	XOUT	Clock Output	62	P22	Memory I/O 3
31	φ	Timing Output .	63	P21 .	Memory I/O 2
32	VSS	0 V	64	P20	Memory I/O 1

### MICROPROCESSOR (IC-503) FUNCTION TABLE

### (1) Outputs of VCO (P10, P11) and VCO filter (P66, P67)

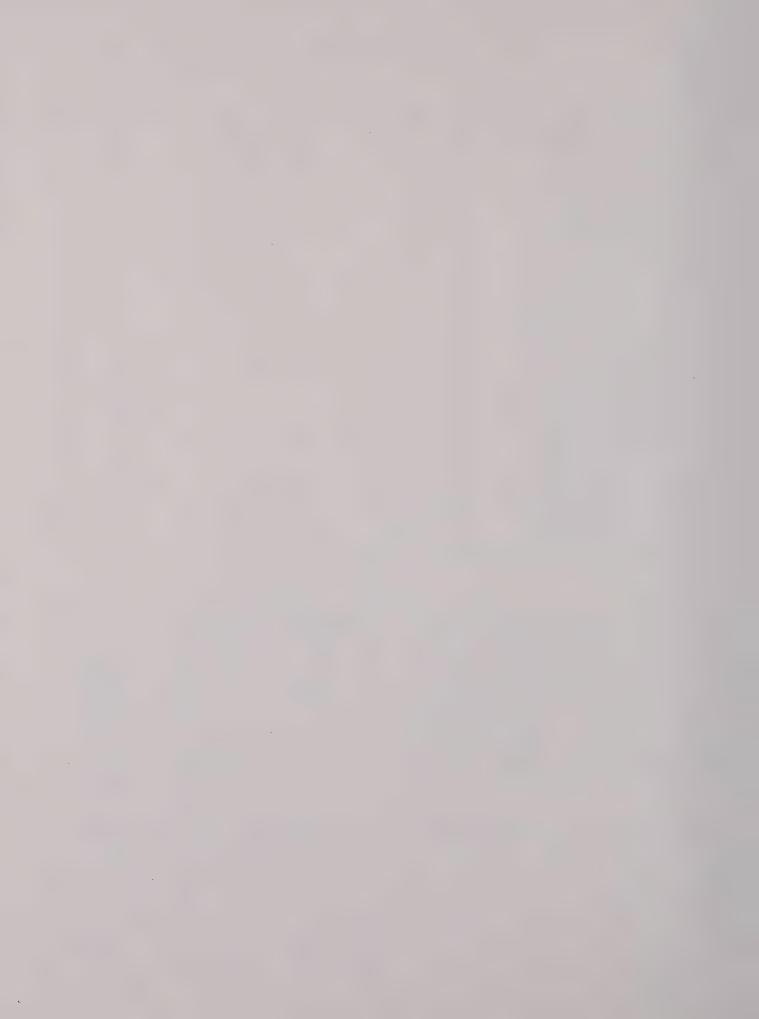
Receiving Frequency (MHz)	VCO Output	VCO filter Output
25.0000 to 220.4950	VCO 1 (P10) "H"	VCO filter 1 (P66)
220.5000 to 520.0000	VCO 2 (P11) "H"	"H" Level
760.0000 to 1052.4950	VCO 1 (P10) "H"	VCO filter 2 (P67)
1052.5000 to 1300.0000	VCO 2 (P11) "H"	"H" Level

### (2) Outputs of RF filter (P12, P13, P14)

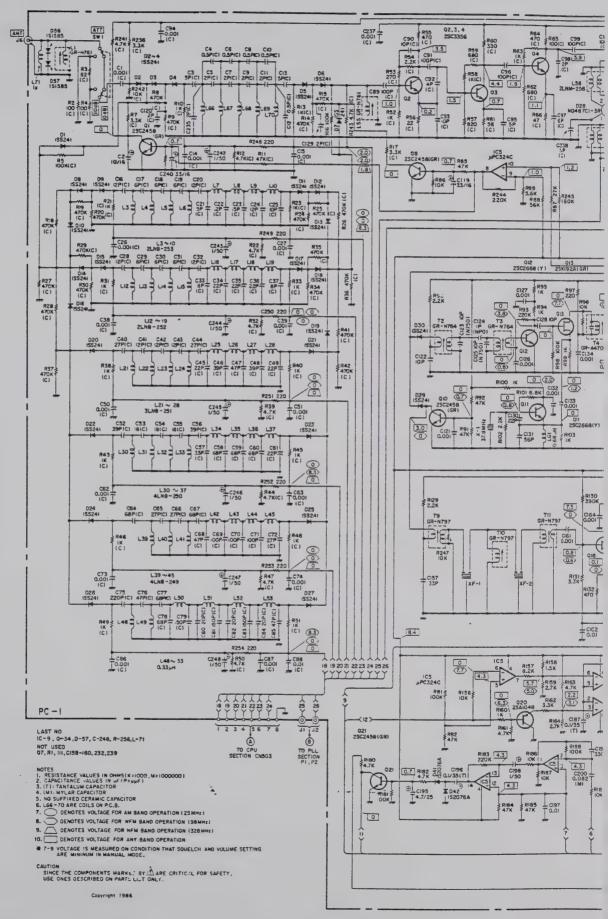
Receiving Frequency (MHz)	P12	P13	P14
25.0000 to 39.9950	Н	L	L
40.0000 to 67.9950	L	Н	L
68.0000 to 107.9950	Н	Н	L
108.0000 to 173.9950	L	L	Н
174.0000 to 279.9950	Д	L	Н
280.0000 to 520.0000	L	Н	Н
760.0000 to 1300.0000	Н	Н	Н

### (3) Outputs of Search (P47) and 5 kHz Step (P37)

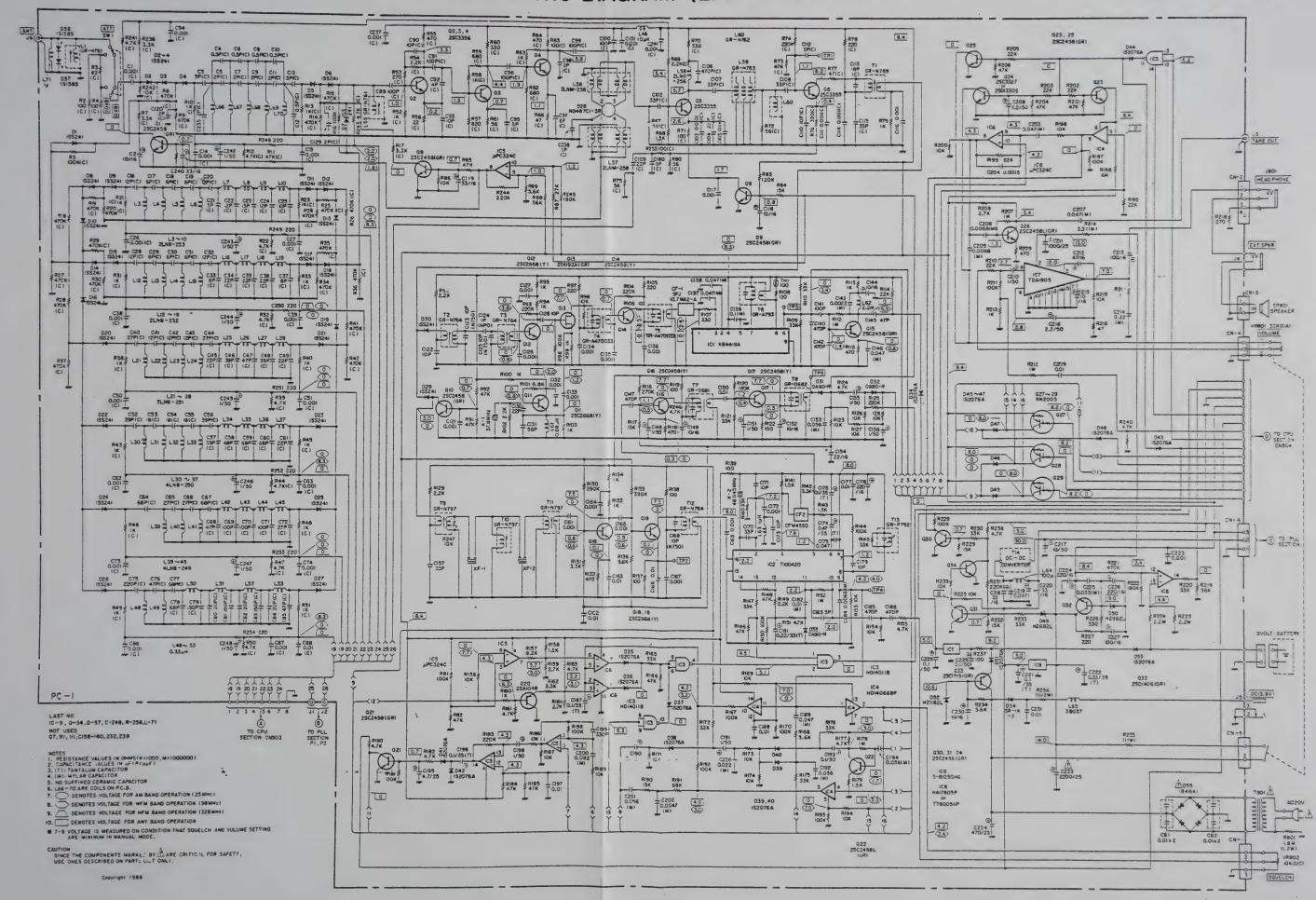
			Search Output (P47)	5 kHz Step Output (P37)
MAN	MANUAL Operation			L
PROC	PROGRAM Operation			L
SCAN	Operation	H L		
	Receiving Frequency	at 5 kHz Step	L	Н
In SEARCH	25 to 520 MHz	at Other Step	L	L
Operation	Receiving Frequency	at 5 kHz Step	· L	H
	760 to 1300 MHz	at Other Step	L	L .



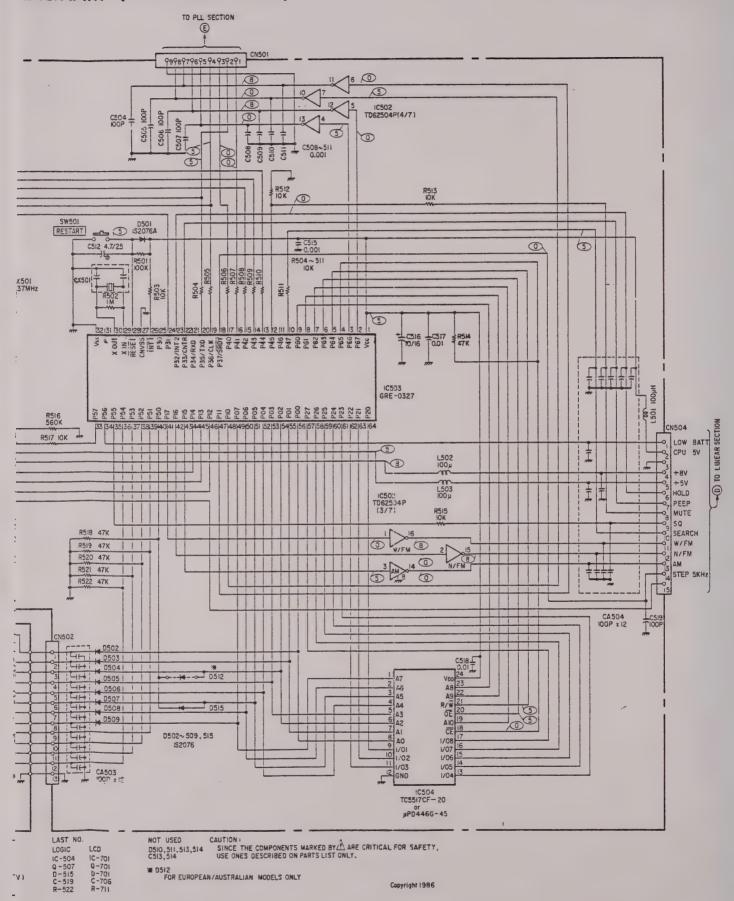
### SCHEMATIC DI



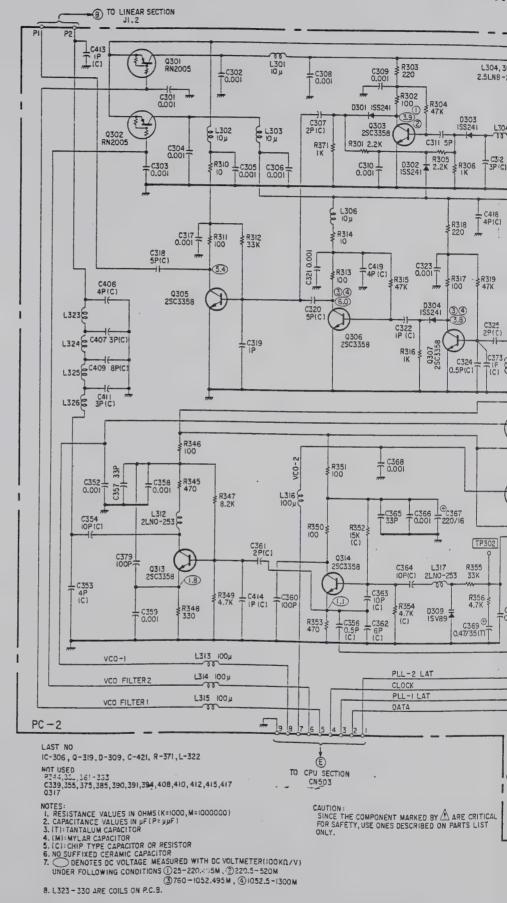


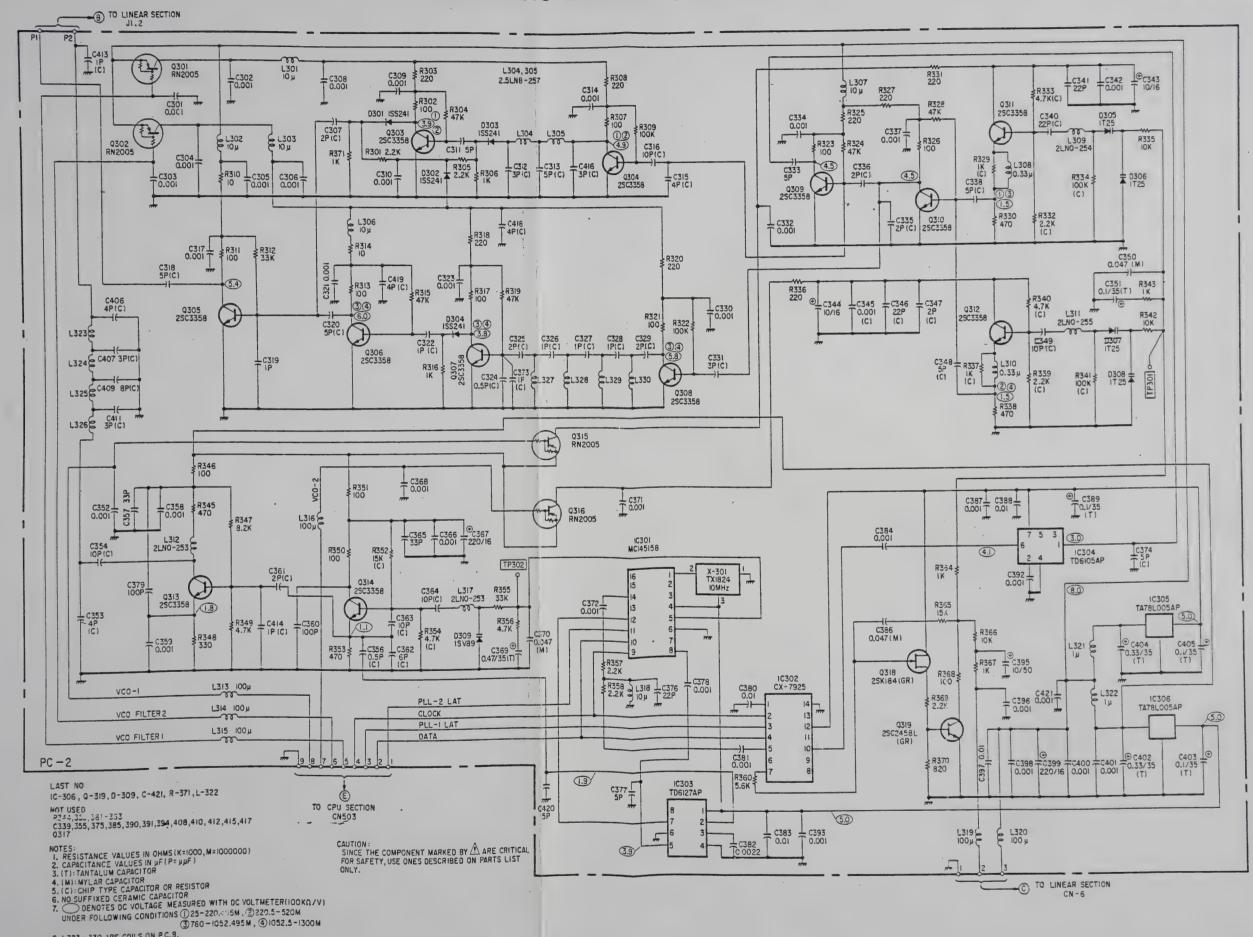


### NAGRAM (CPU SECTION)

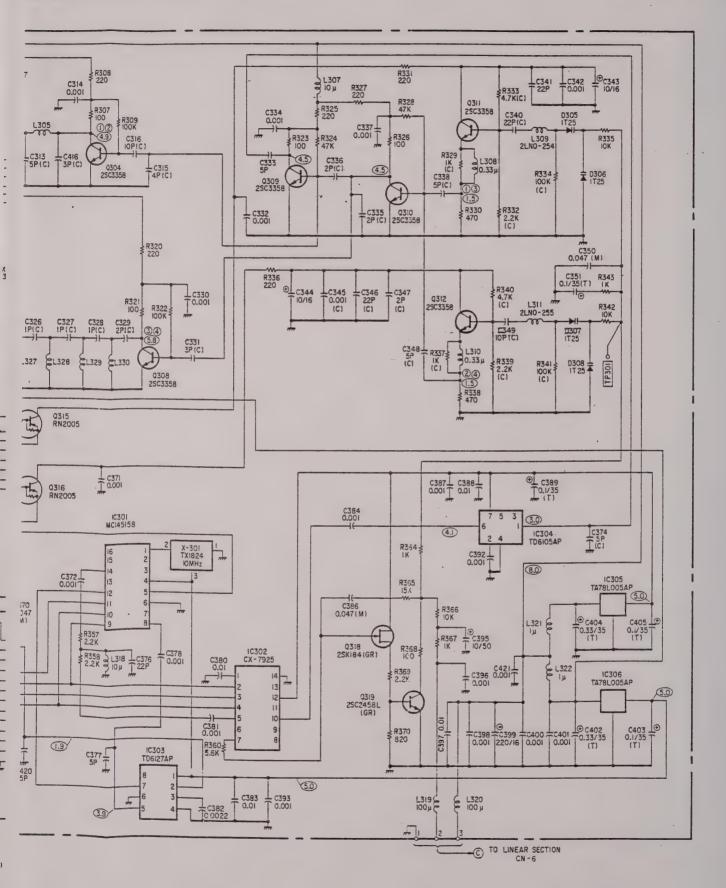


#### SCHEMAT





8. L323 - 330 ARE COILS ON P.C.S.





#### U.S. PATENT NOS.

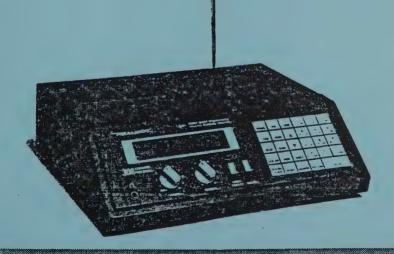
3,794,925 3,801,914 3,961,261 3,962,644 4,027,251 4,092,594 4,123,715 4,245,348

RADIO SHACK
A Division of Tandy Corporation
Fort Worth, Texas 76102

REALISTICE
SERVICE Manual E

PRO-2004
PROGRAMMABLE SCANNER
GENERAL COVERAGE
AM/FM MONITOR RECEIVER

Catalog Number: 20-119/9119



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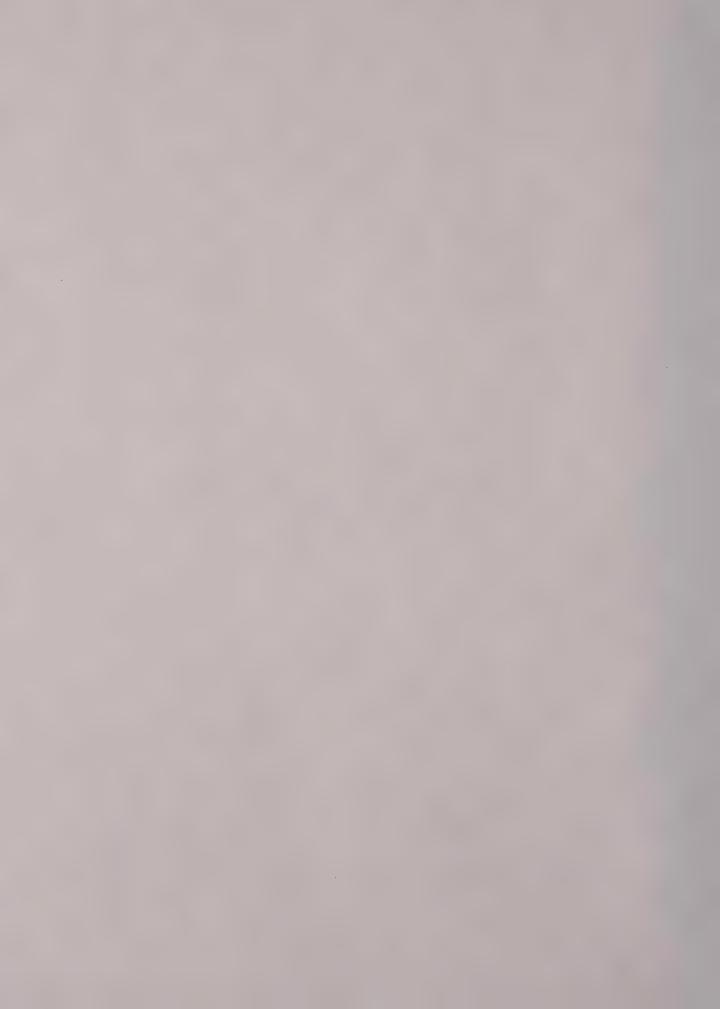




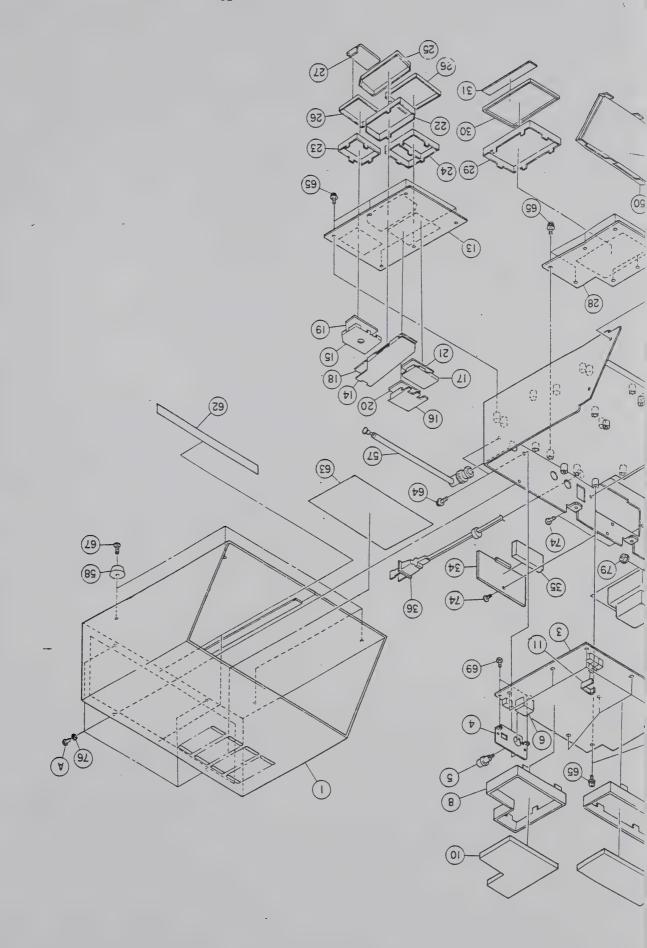
#### U.S. PATENT NOS.

3,794,925 3,801,914 3,961,261 3,962,644 4,027,251 4,092,594 4,123,715 4,245,348

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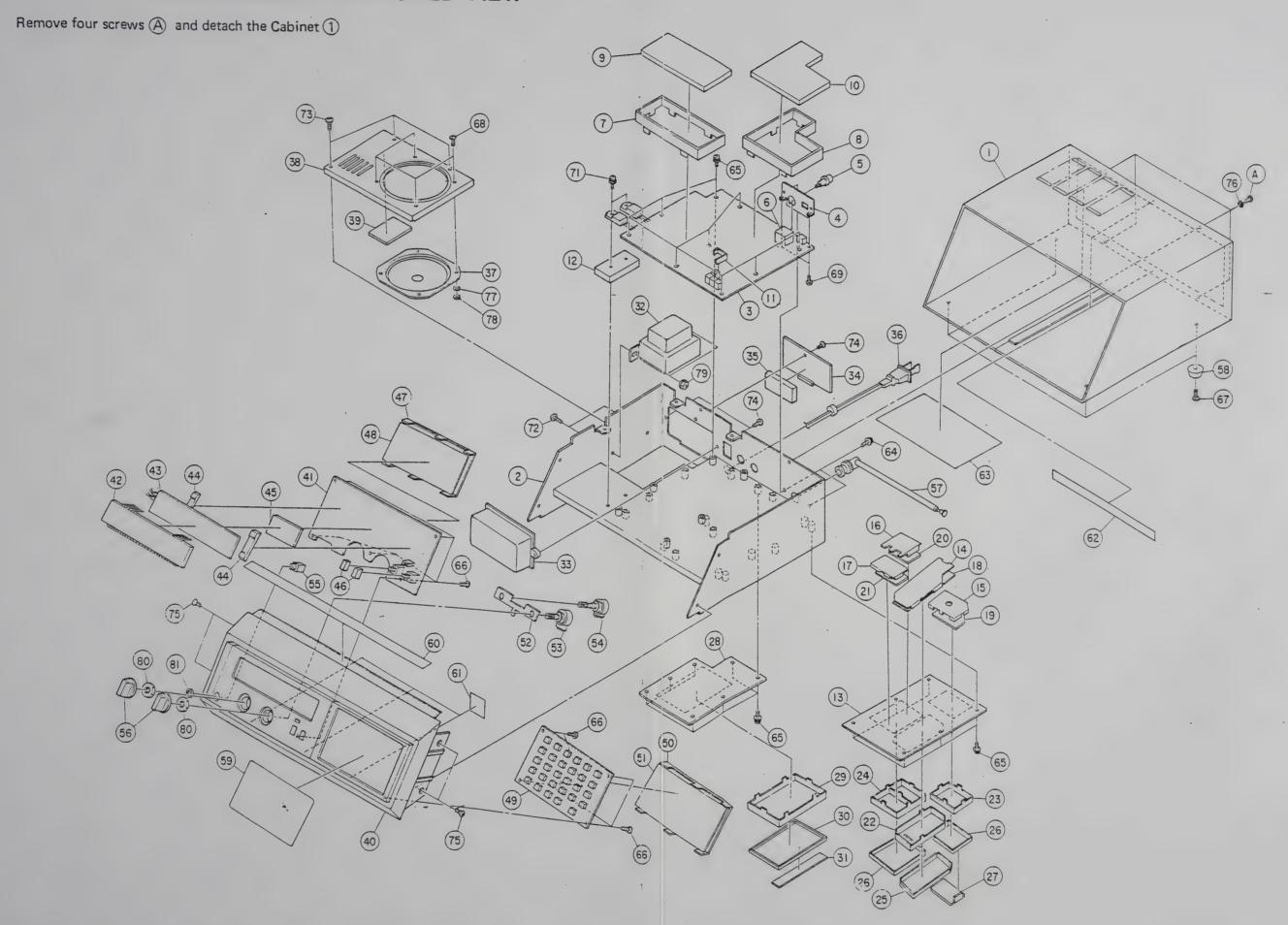


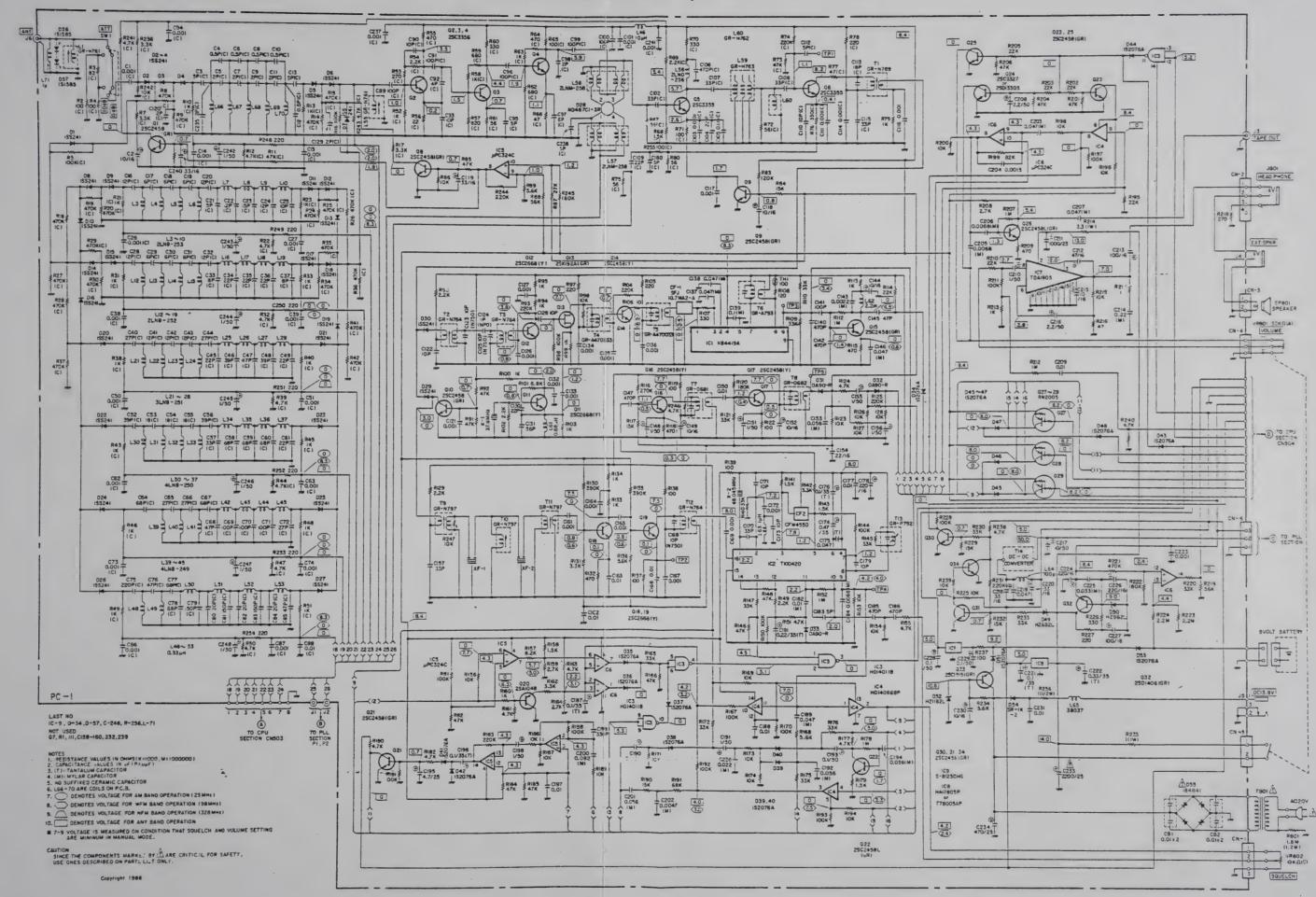






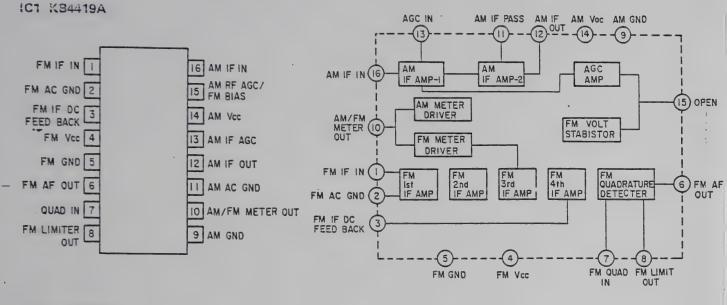
# DISASSEMBLY/EXPLODED VIEW



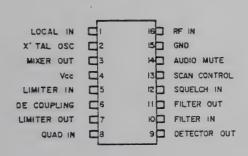


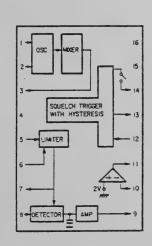
# SEMICONDUCTOR LEAD IDENTIFICATION AND IC CIRCUIT DIAGRAM

### 'INTEGRATED CIRCUIT LEAD IDENTIFICATION

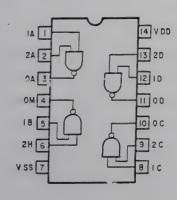


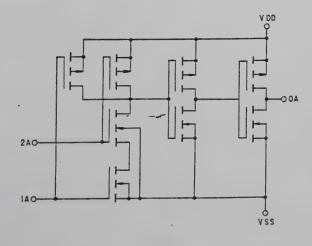
IC2 TK10420



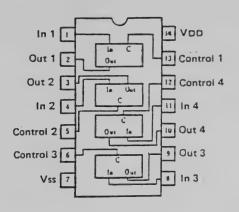


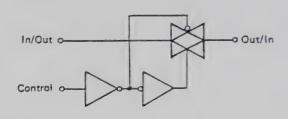
IC3 HD14011B



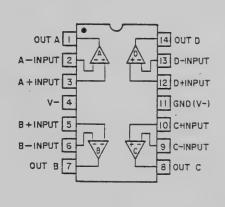


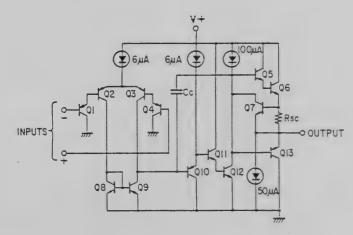
#### IC4 HD14066BP



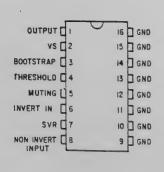


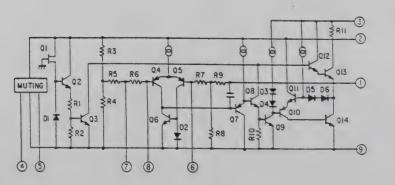
1C5, 6 μPC324C



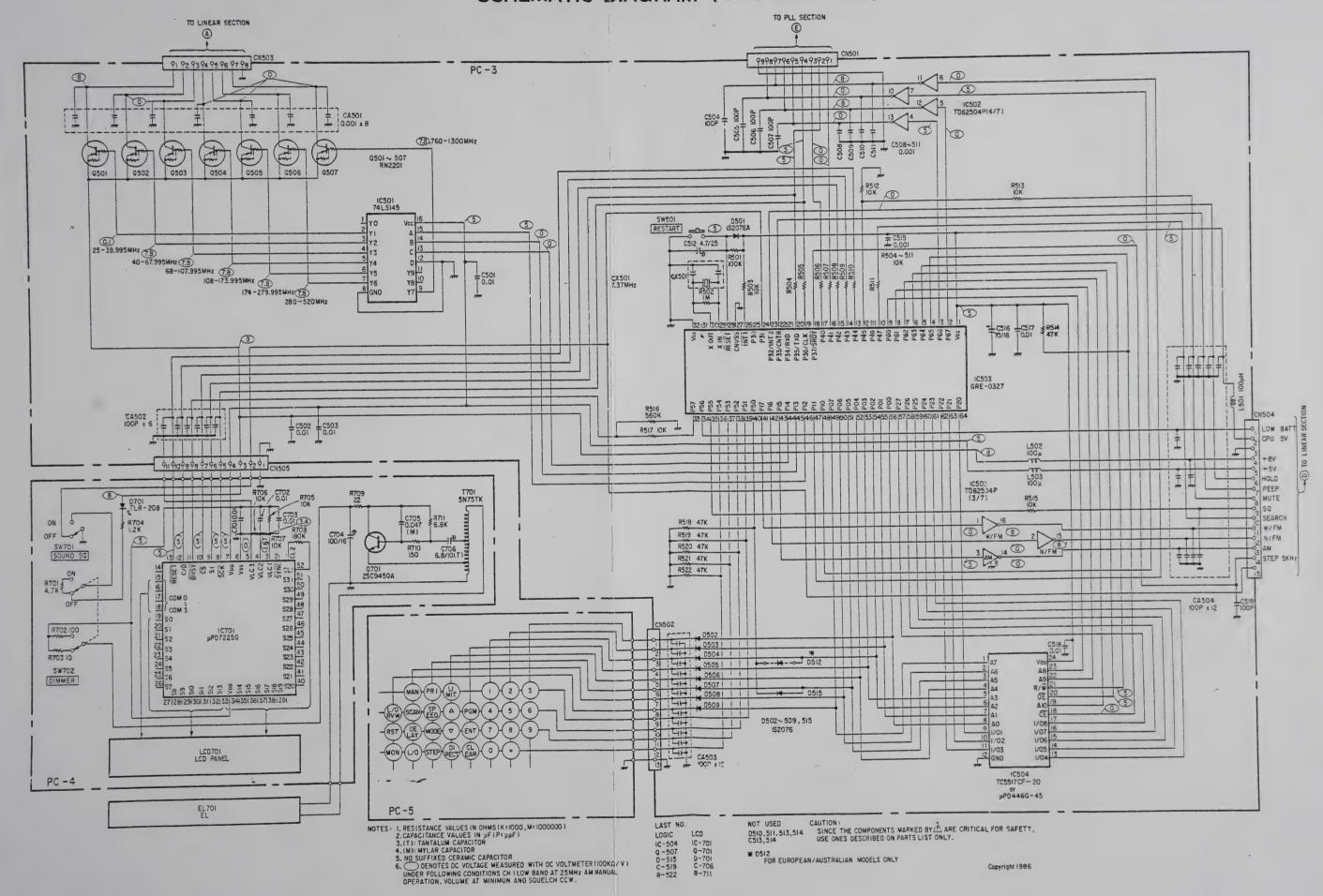


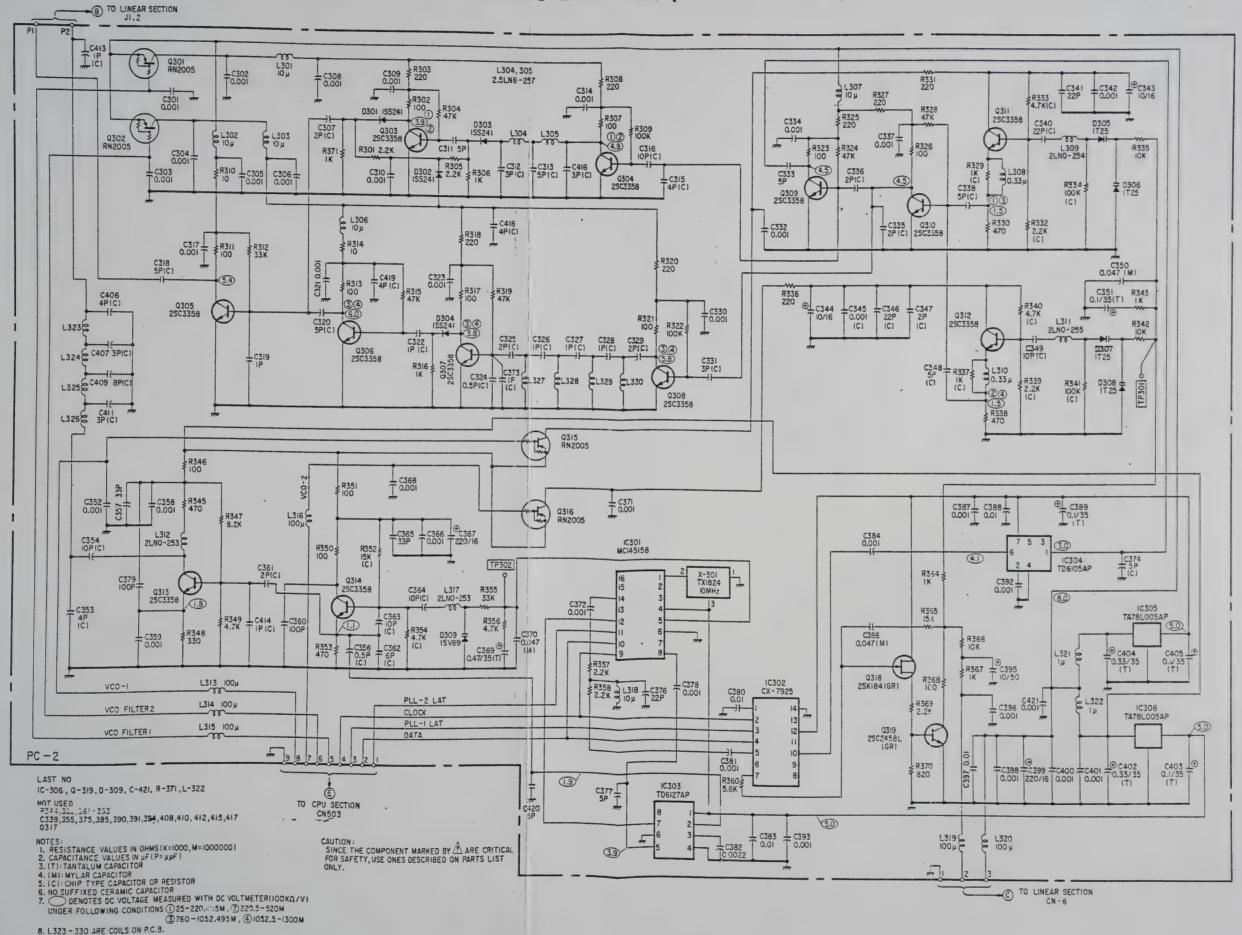
#### IC7 TDA1905



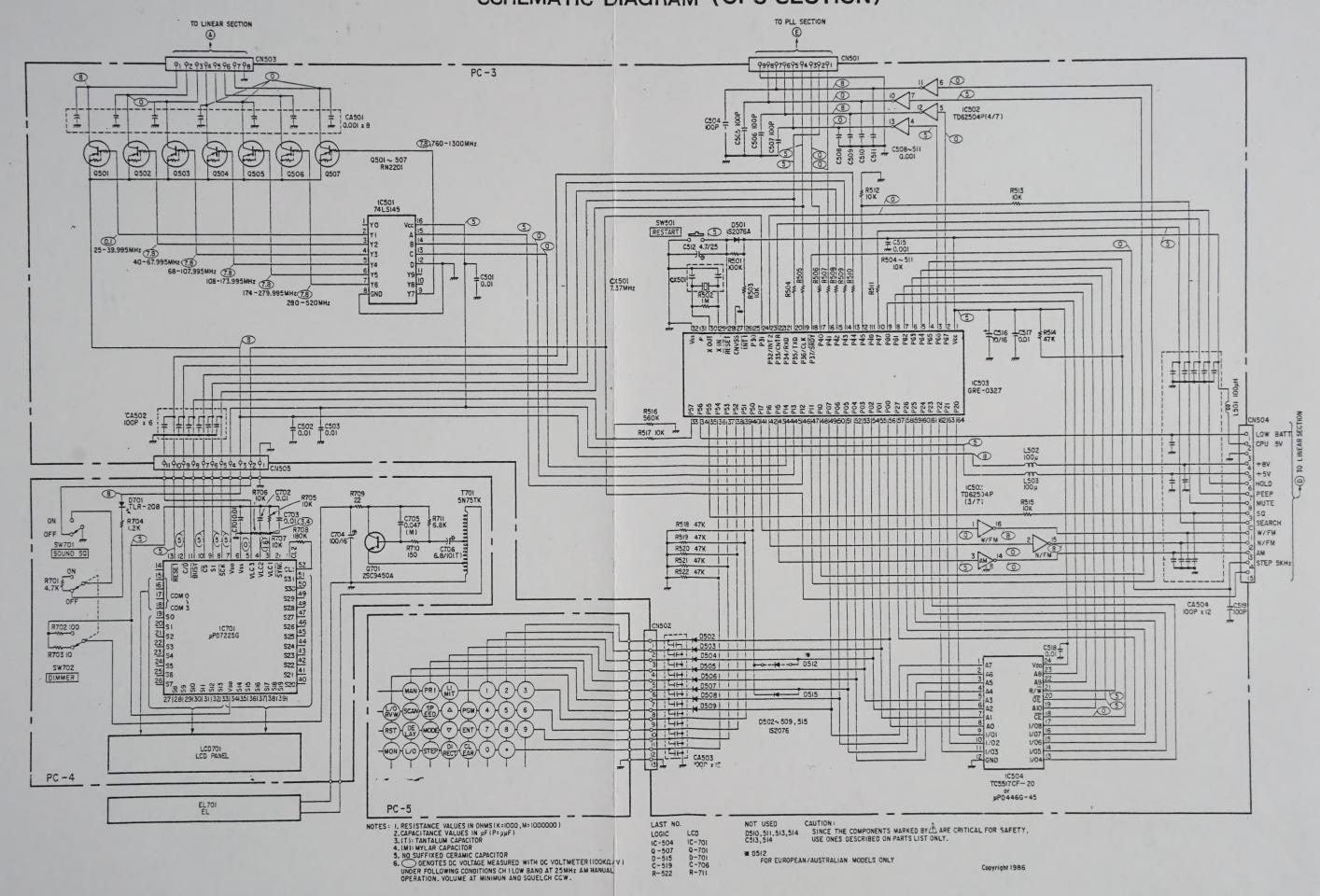


## SCHEMATIC DIAGRAM (CPU SECTION)

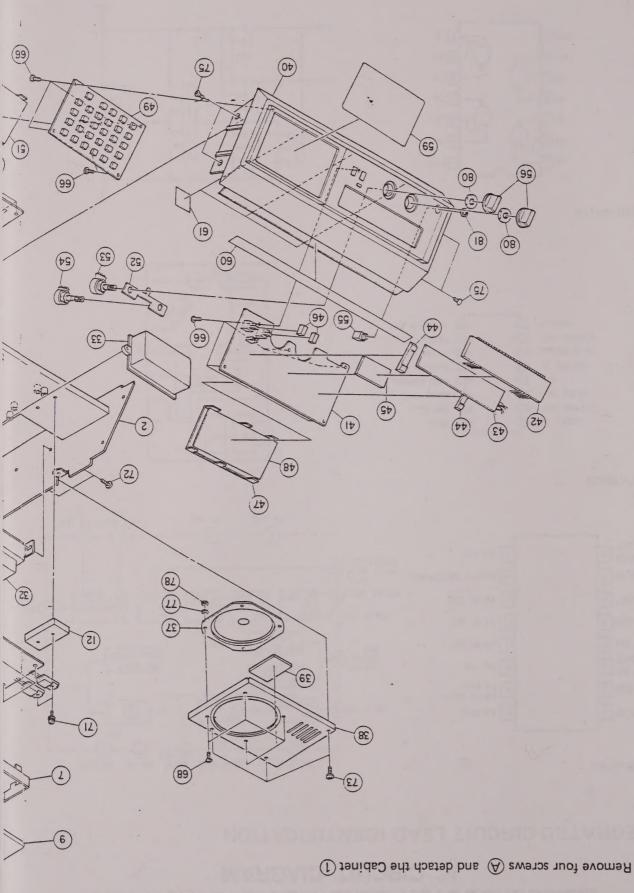




8. L323 - 330 ARE COILS ON P.C.9.



# DISASSEMBLY/EXPLODED VIEW



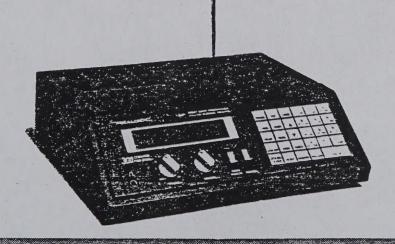
HIR/RILLINY

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# Service Manual

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